News of the Industry Begins Page 470

AUTOMOTIVE INDUSTRIES

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RIGHT ~ *from the Start!*
Almost any designer can "create" body hardware—from the other fellow's *original.*
But it takes vision and knowledge to devise the new things *first.*
It requires experience and skill to make them practical for economical manufacture—and for long continued service.
Only experts so endowed can qualify as Ternstedt designers. For Ternstedt products must be not only *original;* they must be *originally right*—and *right* from that point on.
Otherwise they could not continue in such great demand with that group of automotive manufacturers who collectively produce the world's leading motor cars.
TERNSTEDT
World's Largest Manufacturers of Automobile Body Hardware
DETROIT U. S. A.

AUTOMOTIVE INDUSTRIES

VOLUME 55 *Philadelphia, Thursday, September 16, 1926* NUMBER 12

Bus *and* Truck Control Now Regarded as *Separate* Issues

Testimony adduced at I.C.C. hearings leads to belief that separate bill for bus regulation is now a certainty. Very little demand seen for truck legislation.

By John C. Gourlie

THERE is hardly any demand for Federal regulation of motor truck transportation from shippers or operators, and even some railroads are willing to allow the question to remain in abeyance for the present.

There is a virtually unanimous demand from the carriers for interstate bus regulation, but the substance and method of the control desired varies according to geographical location and conflict of interest.

These are conclusions drawn from the welter of fact and opinion disclosed at the series of Interstate Commerce Commission hearings on motor competition with the railroads, now approaching an end after covering ten widely separated centers of transportation.

Commissioner John J. Esch and Examiner Leo J. Flynn, conducting the hearings, have taken testimony not only from representatives of the industries immediately concerned in commercial truck and bus operation, but also from spokesmen of the public that rides in buses or ships by truck—and that includes nearly everyone. The broadly representative character of the testimony, together with the general agreement on the most important questions at stake, have featured the developments to date.

Testimony Favors Motor Interests

While the trend of testimony has in the main favored the transportation industries, and to an extent surprising to truck and bus operators and manufacturers, unrestrained elation would be premature, as the form of regulation that is likely to be urged on the next Congress is still unknown. But a distinct advantage has been gained.

One of the best things that the testimony has done is to disclose the need for the separate consideration of buses and trucks, in view not only of the legal questions involved, but more importantly of the different character of the operation and the service rendered. Some observers of the hearings are convinced that a separate bill for bus regulation is now a certainty, and this would please everyone concerned,with the possible exception of the railroads.

Important as revealing the tendency of railroad opinion in this respect, however, was the statement of a conference of steam and electric lines covering the New England territory brought out at the Boston hearing last week. This was to the effect that the rail carriers did not favor federal truck regulation in view of the difficulties presented by the preponderance of contract and private motor carriers but that they were emphatic in the support of a policy of interstate bus regulation.

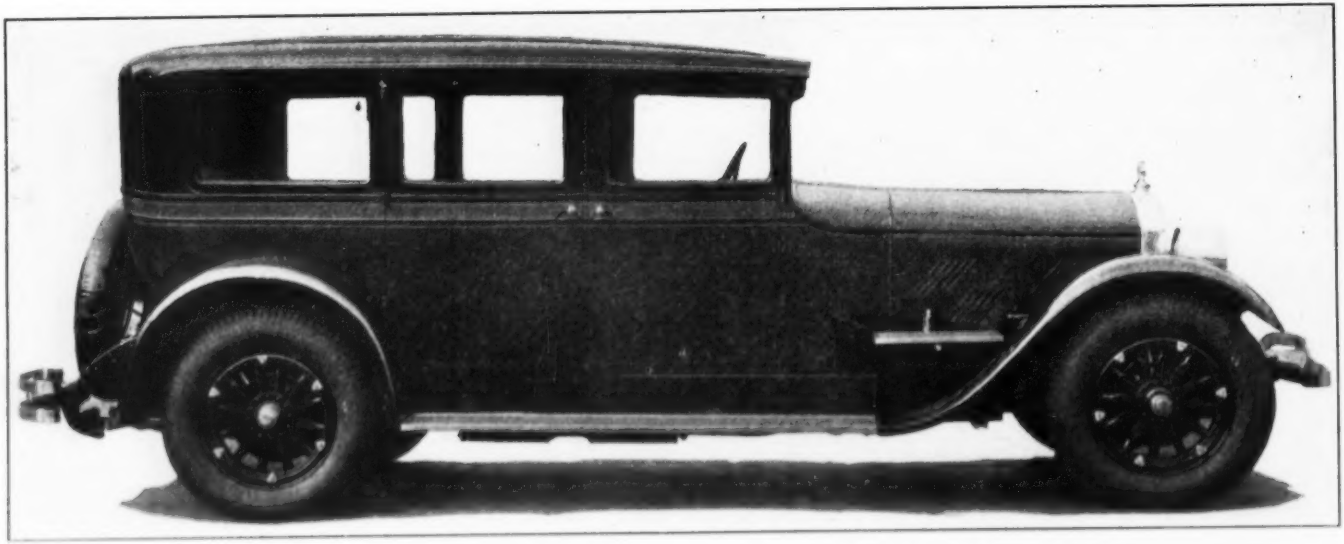
One or two of the steam railroads entered exceptions to this statement, declaring themselves not in favor of truck regulation at this time—but eventually.

On the question of bus regulation, although the railroads and most of the operators were united in favoring control, the purposes back of the support were of course widely at variance. The rail carriers want it to protect them from the competition of independent lines and the operators want it as protection from other operators.

A composite picture of the stands taken by the two camps would show pretty clearly that the form of bill favored by the motor carriers would provide merely for the granting of a certificate of public convenience and necessity by a federal agency or by state agencies acting under federal authority, and taking into consideration only existing motor bus transportation, while the railroad proposal would follow more or less the lines of the Cummins bill, with regulation of routes and tariffs in accordance with the interests of the existing rail services.

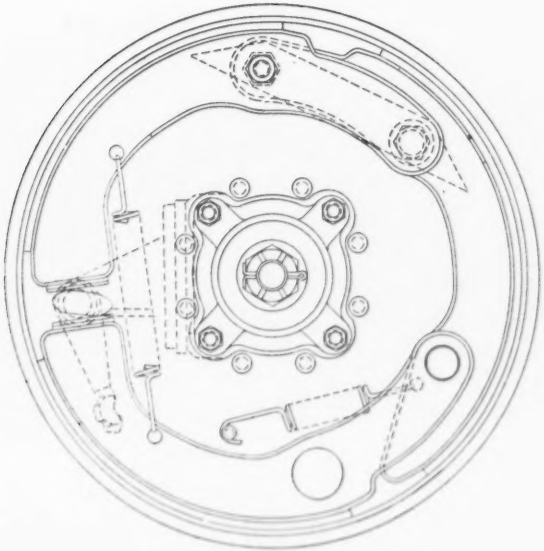
A firm position was taken by the bus operators against this theory. Bus transportation was a new form of service, they held, and if it was preferred by the public it ought to be allowed to endure even if the railroads were thereby in a measure harmed. Steam or electric lines had no more right to protection against bus competition than canal lines had from railroads in the early days, or than the telegraph had against the telephone, or gas against electricity.

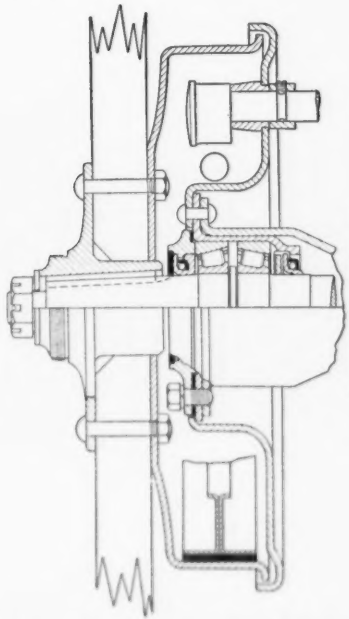
In a notable presentation of the case of the rail and electric lines, C. L. S. Tingley, vice-president of the American Power Co., Wilmington, Del., at the New York hearing,



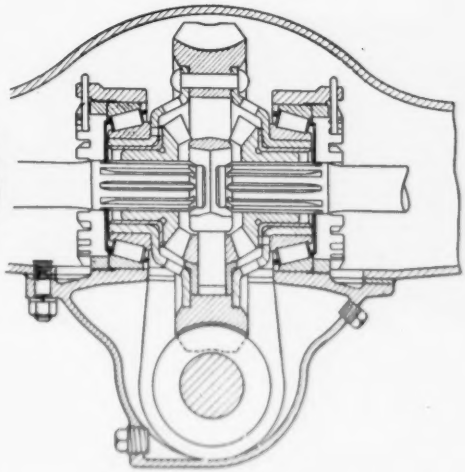
New Stearns model 6-85 seven-passenger sedan

Stearns Introduces New Model With





Details of Stearns worm-driven rear axle



The gearset, which is built in the Stearns shop, contains the same internal specifications covering gears, bearings and teeth ratios, as were used in the 6-95 model. The case is now slightly wider and the assembly has

taken by the springs. The rear axle is a model 6012BX employing a pressed steel one piece housing provided with welded-in re-enforcing sections inside of the spring pads. The worm gear is of special bronze and the work

said that it was manifestly unjust for a regulated utility to have to compete against unregulated lines. But it was pointed out on the other side that the rail carriers had the privilege of adopting motor transportation where their own services were unable to compete profitably against the new unregulated agency.

However, what Mr. Tingley was pleading for, as he soon showed, was the sort of regulation that would abolish motor competition by independents, regardless of the fact that the operators had invested capital in the risk of pioneering service. He argued that regulated monopolies for all transportation lines would be for the public interest, a point on which many bus operators would agree if it meant monopolies for the established independent motor lines.

Popularity is Recognized

The evidence in many cases indicated clearly that both steam and electric lines recognize the palpable advantages and the public popularity of bus lines, and would like to launch services of their own, but find established routes operated by independents already in the field. Where buses are subject to intrastate regulation by motor vehicle commissioners it is known that railroads frequently are unable to obtain certificates for proposed bus lines.

Much of the testimony went to show that bus rates are equal to or higher than rail rates, which places the competition on a basis of service. It is difficult to see, therefore, how regulation could help the railroads or harm the buses unless the regulation was so plainly unfair as to raise bus rates or eliminate established lines.

As to statistics on bus traffic, several railroads made estimates of losses due to motor coach competition, but other figures presented showed what is now a familiar fact—that by far the major losses in railroad passenger revenue were suffered prior to the time when bus operation became a factor of importance. Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads, brought out the fact that the passenger-carrying capacity of the private passenger automobiles of the country is about thirty times that of the railroads, expressed in passenger miles.

A gratifying development of the hearings has been the whole-hearted manner in which chambers of commerce, shippers' associations and individual shippers have rallied to the support of truck transportation, which involved flat opposition in most cases, to any federal regulation at the present time.

An example in point was the activity of William H. Chandler, manager of the traffic bureau of the New York Merchants Association and representing also the National Industrial Traffic League and the Shippers Conference of Greater New York. He declared that any legislation ought to fit the needs of the new service rendered by the motor truck, for it was doing what the railroads could not do—reducing time in transit, accepting shipments in forms unsuited for rail transportation, and giving store door delivery.

Protection of Revenue

In order to compete, said Mr. Chandler, the rail carriers would have to reduce congestion at their terminals and give store door delivery. After a detailed attack on the Cummins bill, he declared that if there was regulation of truck rates the operators would be entitled to the same protection of revenue as was accorded the rail carriers under the Interstate Commerce Act.

Calling upon a dozen or more witnesses who use or operate motor trucks, Mr. Chandler brought out the special services being rendered by the commercial vehicles, for which special rates necessarily had to be charged. Although these matters are commonplace to persons familiar with the industry, they must have opened the eyes of many of those who attended the hearing.

The legal obstacles to effective truck regulation already referred to arise from the fact that private carriers are constitutionally exempt from any but police control, and, in all likelihood, contract carriers are in the same category. There remain only common carriers and these on the basis of the estimates used by Commissioner Esch, are only 5 per cent of the trucks in operation, 15 per cent being contract carriers and the rest private.

The field for regulation is thus narrow and the truck operators in the main took the position that regulation of common carriers leaving contract and private carriers unrestricted would involve a hardship on the minority without any compensating benefits. On this point Harold S. Shertz, representing the Motor Truck Association of Philadelphia, Philadelphia Team and Motor Truck Owners Association and Motor Truck Owners Association of Delaware County, said:

"Where one operates purely as a private carrier he cannot be forced to extend his holding out to that of a common carrier. If, therefore, the common carrier truck is regulated it will be the prey of the private or contract carrier who is free from regulatory control of Congress. The private carrier can watch the development of the common carrier, select only that which it desires to carry and take from the common carrier the profitable tonnage and leave it with the burden of that whch is unprofitable."

Mr. Shertz then proceeded to show how any actual regulation would tend to restrict the elasticity of service and rates vital to the success of common carrier trucking, and place the business at an enormous competitive disadvantage.

Would Not Help Rail Business

"It would force the shipper to the operation of his own trucks," he continued, "or the service of the contract operator to serve his needs. The business would not go to any degree to the rail or express carrier."

Some slight demand by truck operators for federal regulation developed at several points on the circuit. In these cases there was already state regulation and the operators obviously hoped to benefit from a monopoly, but they had to admit under cross-examination that the state laws did not protect them against private and contract carriers.

In California and one or two other places the belief was expressed that the contract truckmen could be brought under regulation despite the Supreme Court decision that contract carriers could not be forced to hold themselves out as common carriers. It was pointed out that the decision did not say that the operators could not be regulated as common carriers and that in any event some means might be found through the police power of the state and nation.

In this connection the statement of Commissioner Esch at one of the hearings that the I. C. C. was concerned only with the 5 per cent of trucks operated as common carriers is worth noting.

Doubtless all these considerations entered into the policy frequently followed by the railroads of emphasizing the need for bus rather than truck regulation. But there was another and more important point, and the spokesmen for the truckers lost no opportunities of pressing it home.

The rail carriers had a record year in 1925 in freight business, and results for the first six months of 1926 indicate that last year's mark will be substantially better. There was even a slight increase in passenger revenue, but the unmistakable prosperity of the freight end almost

entirely precluded any plea for protection on the ground of damaging competition.

Many of the railroads apparently feel that it will be comparatively easy to get a bus bill through Congress but that the attempt to incorporate truck regulation might jeopardize the whole scheme.

At the hearings there was less tendency than might have been expected for the railroads to bring up the old point about their heavy taxation and road maintenance costs as against the "free use" of the highways by the motor truck and bus. The argument was heard fairly frequently, however, and the reply of John L. Lovett, general manager of the Michigan Manufacturers Association, is of interest:

"A vast amount of money is being expended for good roads, and that money would be spent regardless of the operation of trucks. The demand for good roads comes from the passenger riding public. The truck, of course, has adopted the use of these highways, and good highways have extended the operation of trucks, but the demand for good roads has come, not from the truck operators, but from the passenger riding automobile owners of the United States.

"There is no good reason in the argument that because a truck uses the highways it should be assessed for a much greater license tax than any other class of motor vehicle using the highways."

Lovett then called attention to the fact that it had been brought out in the testimony that a great many trucks are paying from $600 up in taxes in the State of Michigan, in the weight tax, the special fee for common carriers, gasoline tax and other license taxes.

Railroad Policies to Blame

Lovett pointed out that the railroads themselves had given enormous stimulus to truck growth by the impairment of service in the handling of less than carload business for distances under 100 miles, which they five or six years ago decided was unprofitable. He continued:

"In our opinion, there is still time for the rail carriers to take advantage of this truck service and operate their own truck lines for the purpose of handling L. C. L. freight and feeding into carload lots. The store door delivery has been so firmly established that the railroads, to compete with the truck companies for this business, must offer a similar service. I think the shippers, generally, would appreciate a joint truck and rail service operated by responsible carriers.'

In one of the few really valuable studies presented to the Commission, Mr. Lovett brought out that the amount of freight moved annually by motor truck in Michigan, for the 150 manufacturers returning a questionnaire sent out by the association, is 677,795,000 lb. Of this amount 163,330,000 lb. is incoming freight comprising either raw or partially manufactured materials, and the outgoing freight 514,465,000 lb. These figures represent 26.7 per cent of the total inbound and outbound freight of these concerns. Approximately 16 per cent of the total carried by truck is interstate shipment.

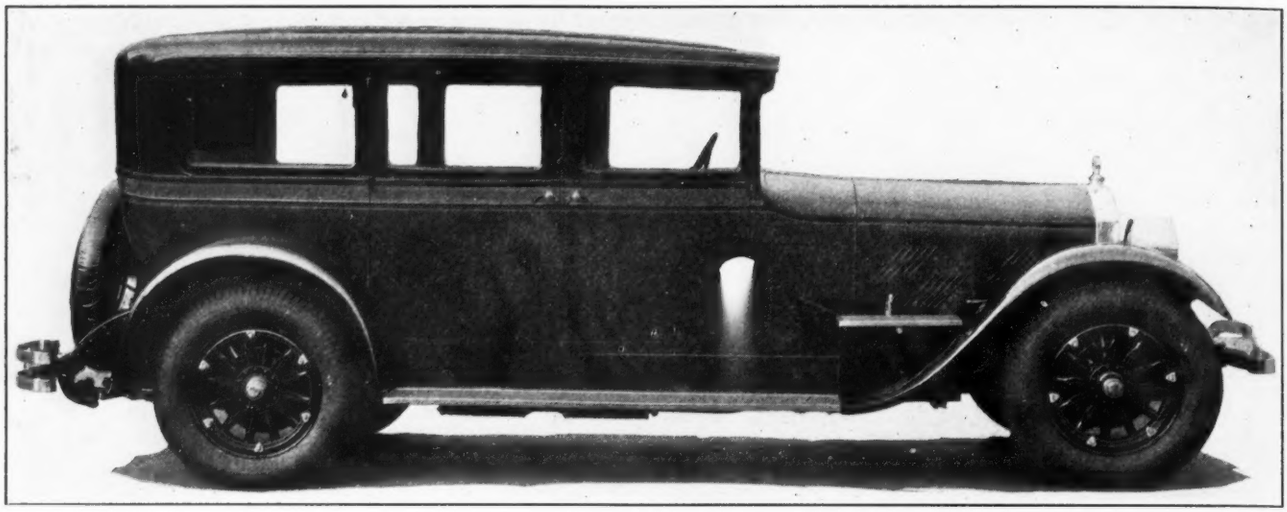
Farmer's Voice is Heard

The voice of the farmer in truck matters was given interesting expression at the Detroit hearing. C. S. Long, traffic manager, Ohio Farm Bureau Association, who also represented the Ohio State Grange, told how both of these organizations, representing thousands of farmers, oppose any regulation which would interfere with the use of the truck in agriculture. The motor truck was pictured by Long as one of the greatest boons Ohio agriculture possesses. It has opened up new agricultural territories which formerly were so far removed from rail lines as to make certain types of farming almost impractical. The truck and especially the contract carrier has taken such a definite place in the agricultural picture that to pass any legislation which might tend to restrict its use would be a marked handicap.

A. P. Mills, of Lansing, traffic manager of the Michigan State Farm Bureau, told how the use of trucks has contributed largely to the prosperity of the farmer in general. About 60 per cent of the farmers' own trucks, and in many instances they haul produce for their neighbors, payment for such services being made in exchange of work, a method commonly pursued in rural communities. The wide use of trucks by farmers, instead of taking business away from the railroads, has increased their tonnage, for the truck has opened up new and wide fields to the railroads which they couldn't take advantage of before.

With farmers, traditionally supicious of the ways and purposes of manufacturing and trading interests, thus joining the chorus of praise of truck transportation, the song indeed became a cheer. Taken by and large, the testimony presented at the hearings has done more to fortify motor transportation in public regard than years of less spectacular evidence of service.

Cities covered so far by the hearings are Chicago, St. Paul, Portland, Ore., San Francisco, Los Angeles, Denver, Detroit, Boston, New York and Asheville, leaving Kansas City and Washington alone on the schedule. Among the men of the industry that have taken part in one or more of the sessions are D. C. Fenner, Mack Trucks; W. B. Brearly, Autocar; F. C. Horner, General Motors Corp., and A. E. Waterfall, Dodge. Edward F. Loomis, secretary of the motor truck committee of the National Automobile Chamber of Commerce, was in constant attendance, and his broad knowledge of both rail and motor transportation was of invaluable assistance to local operators and shippers in preparing their presentations. His adroit questioning often revealed the weakness of an opponent's position.



New Stearns model 6-85 seven-passenger sedan

Stearns Introduces New Model With Worm-Driven Rear Axle

Frame is redesigned to provide unusual rigidity. Ten body styles offered on 137 in. wheelbase chassis. Myers magazine chassis oilers, AC air cleaner and Purolator oil filter used.

By Paul Dumas

MAXIMUM silence of operation of the chassis major units and reduction to the minimum of body noises incident to high speed performance of a closed car have been the objectives sought for in the design of the Model 6-85, which is the latest addition to the line of the F. B. Stearns Co. The outstanding constructional features utilized to express this effort include a worm driven rear axle, a frame of unusual rigidity and composite bodies of sturdy construction.

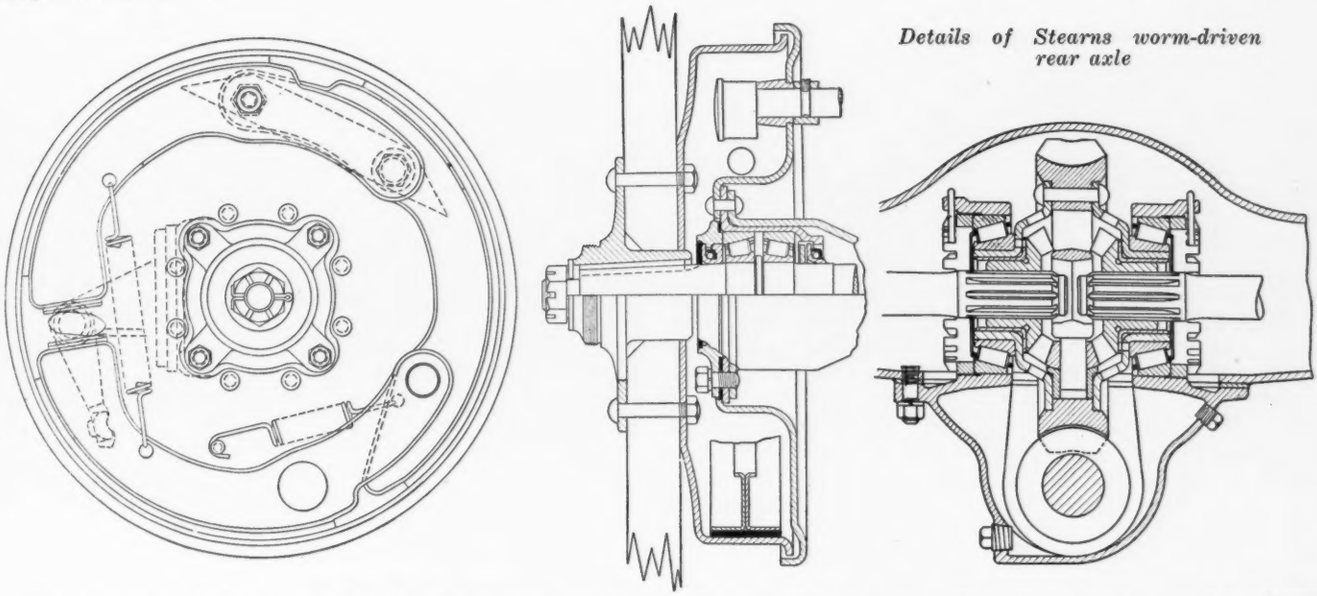
The new chassis of 137 in. wheelbase which will be built in ten body styles utilizes substantially the same unit powerplant used in the model 6-95, which it supersedes. Due to the frame and axle construction, the 6-85 is much lower in height than any previous Stearns, a feature which is counted on to enhance the appearance and road ability of the new model. Four wheel Bendix mechanical brakes and Myers magazine chassis oilers are furnished as regular equipment.

The body models and f.o.b. prices are: 2 passenger rumble seat roadster, $3250; 4 passenger sport touring, $3250; 4 passenger coupe, $3350; 5 passenger standard sedan, $3350; 5 passenger custom sedan, $3350; 7 passenger sedan, $3550; 2 passenger cabriolet roadster, $3550; 5 passenger standard sedan limousine, $3550; 5 passenger custom sedan limousine, $3550; 7 passenger sedan limousine, $3750; chassis, $2850.

The characteristic Stearns radiator contour with its white line front stripe is retained in the new models, although the shell height has been lowered approximately 3 inches. In keeping with the lowering of the shell the roof line and the floor board elevation have been brought much closer to the ground, due largely to the use of the double kickup in the frame and the redesigning of the transmission case to permit lowering of the front floor boards.

The unit powerplant comprises the 3½x5 in. bore and stroke six cylinder sleeve valve engine, a 3 speed gearset, and 11 in. Borg & Beck push type clutch equipped with a graphite type throwout bearing. Save for the installation of an AC air cleaner, Purolator oil filter, and a new style Tillottson carburetor, the engine is an exact duplicate of the one used in the 6-95 model. The three point suspension characteristic of the former 6-95 is retained, but in the new chassis the engine is set at an angle of 3 degrees to permit an approximately straight line drive to the rear axle. Fuel feed is by Stewart vacuum system from a 24-gal. supply tank at the rear of the chassis. De Jon electrical equipment is used throughout with the exception of the horn which is of Sparton make. The battery is a 83 ampere hour, 12 volt type of USL make.

As on the 6-95 model exhaust gases passing through the inlet manifold hotspot are discharged through a separate silencing muffler and carried to the rear of the car by a full length tail pipe. The engine normal exhaust line is provided with dual Powell mufflers to obtain maximum silencing. This layout is also utilized to provide quiet operation of the Perfection exhaust type heater, the inlet of which is connected to the front muffler while the outlet from the heater unit discharges into the rear muffler.



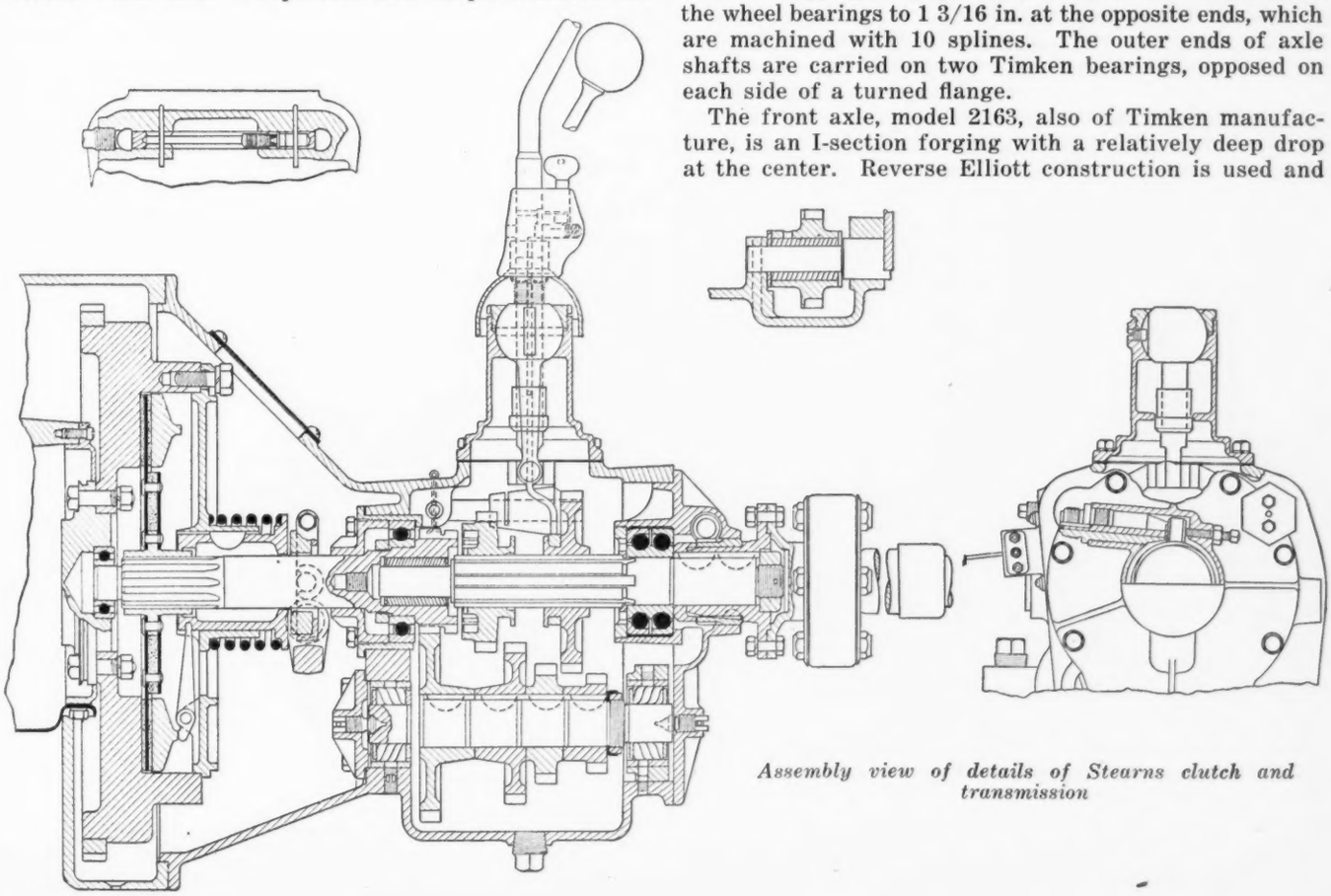
Details of Stearns worm-driven rear axle

The gearset, which is built in the Stearns shop, contains the same internal specifications covering gears, bearings and teeth ratios, as were used in the 6-95 model. The case is now slightly wider and the assembly has been reduced in height approximately 3 inches to permit relocation of the shifter rods. Roller and ball bearings are used throughout, including the countershaft and reverse idler mountings.

The backup light switch is built into the gearset housing.

A 2 in. tubular propeller shaft with an oil lubricated Mechanic's Universal joint at each end is used to connect the gear set to the three-quarter floating Timken inverted worm axle. Propulsion and torque reaction are taken by the springs. The rear axle is a model 6012BX employing a pressed steel one piece housing provided with welded-in re-enforcing sections inside of the spring pads. The worm gear is of special bronze and the work of hardened alloy steel. The rear axle reduction ratio is 5 to 1. The worm gear is riveted to a light pressed steel carrier which also forms the housing for a 4 pinion differential assembly. Timken roller bearings with screw adjusting nuts are used to support the carrier assembly, while two bearings of the same make are placed back to back at the rear of the worm shaft to take thrust in both directions. The front of the worm shaft is carried in a Hyatt roller bearing. Axle shafts are of chrome nickel steel and taper gradually from a diameter of 1 13/16 in. at the wheel bearings to 1 3/16 in. at the opposite ends, which are machined with 10 splines. The outer ends of axle shafts are carried on two Timken bearings, opposed on each side of a turned flange.

The front axle, model 2163, also of Timken manufacture, is an I-section forging with a relatively deep drop at the center. Reverse Elliott construction is used and



Assembly view of details of Stearns clutch and transmission

the steering pivot pins are secured in the axle bosses. Bronze bushings of 1 5/16 in. length and 1 in. diameter are pressed into the knuckle while the vertical load is carried on a ball thrust bearing. Steering pivot pins are inclined outward at an angle of 6 degrees. The front wheels are carried on Timken bearings. The steering cross rod has a ball joint connection at each end lubricated by screwed on Myers magazine oilers, a similar method of lubrication being also employed at the top of each steering pivot pin. Balloon tires are 32x6.75 in., 6 ply construction, mounted on 12 spoke wood artillery wheels. Wire or disk wheels are optional at slight extra cost.

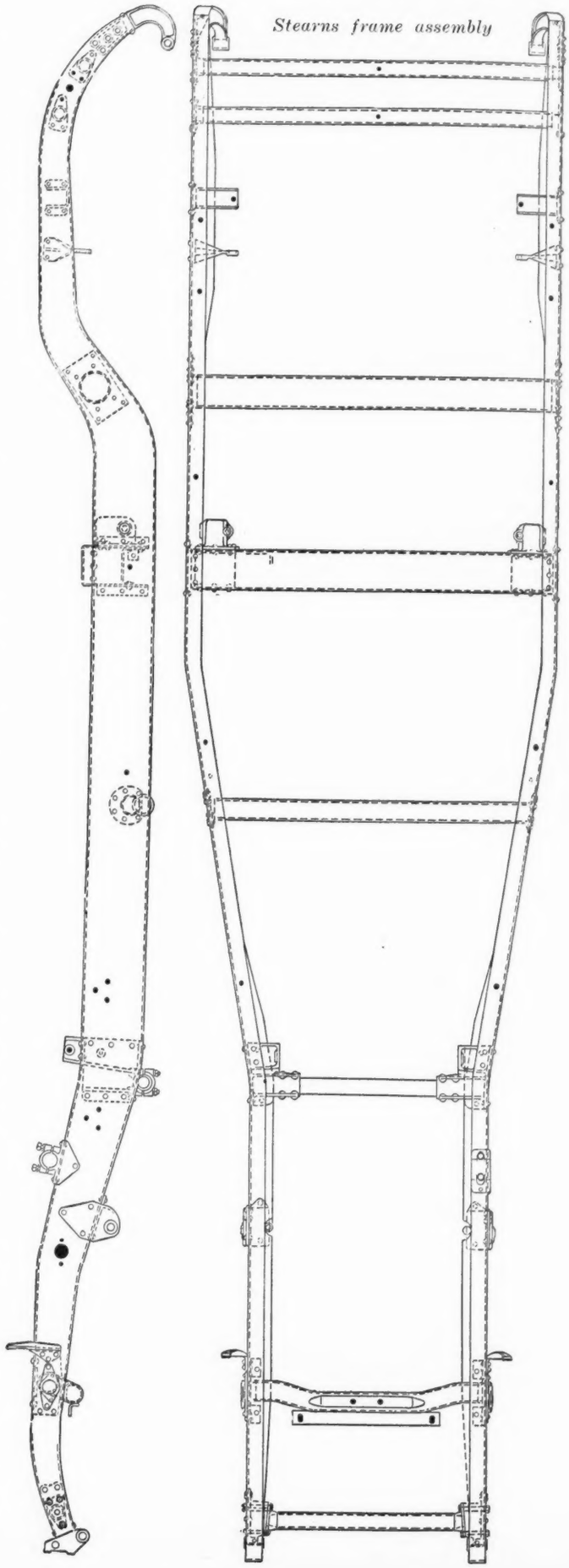
Steering is by means of a Ross cam and lever gear of 16 to 1 ratio.

The Bendix four wheel brakes are of the internal expanding three shoe type. Front and rear drums are 14 in. diameter by 2 in. width. Operation of the foot pedal actuates the brakes on front and rear wheels. Movement of the hand lever, which is provided with a follower plate to exclude cold and dust, actuates the rear wheel service shoes only.

Frame Design

In order to provide a short turning radius the frame is tapered from a maximum of 47 in. width at the rear to 30 in. in that portion of its length ahead of the third tubular member from the front. It has a double drop representing a kickup of 4 in. at the front and 7 in. at the rear. The stock thickness is 5/32 in. and the channel side rails of 7¾ in. depth are tied together by 7 tubular and one channel section cross members. An idea of the ruggedness of the construction is apparent by reference to the illustration. The front tubular member is placed just behind the front spring fittings (which carry integral Myers magazine oilers) and is of 2 in. diameter. Just behind this is the second tubular member of 2½ in. diameter which is dropped at the center to provide the front support for the engine. The shelf welded to the front side of this member carries the radiator. The third tube, approximately 2¼ in. in diameter, is located underneath the engine rear supporting member. The fourth tubular member is located approximately 14 in. to the rear of the transmission. This tube is of 2½ in. diameter and in addition to bracing the frame, acts as a mounting for the brake cross shaft and the front end of the dual muffler and exhaust pipe assembly. No. 5 cross member is a pressed steel channel section of ⅜ in. stock approximately 5 in. in width and depth. This channel is arched at the bottom to clear the propeller shaft and to it are riveted the combination magazine oilers and spring brackets for anchorage of the front end of the rear springs. The sixth member is a massive tube of 4 in. diameter located at the approximate point of maximum torsion at the beginning of the rear kickup. Two tubular members placed about six inches apart and of 2 in. diameter tie the frame together at the rear spring brackets. The No. 7 tube also serves as a third point of support for the pressed steel gasoline supply tank.

Springs are of the semi-elliptic type, the rear ones being undermounted on the axle and located inside of the frame side rails. The semi-goose neck frame fittings which carry the rear end of these springs point inward approximately 2 in. to provide the inside mounting. The rear springs are 2¼ in. width with a length of 62 in. The front springs are shackled at their forward end to provide a more ideal steering condition. They are 2¼ in. width and 40 in. long. Spring bolt dimensions are ¾ in. diameter by 4 5/16 in. length except at the front of the rear springs where the diameter is ⅞ in.



Stearns frame assembly

Originality of design is apparent in the bodies which are built up over a framework of clear ash and maple. All framework wood joints are white leaded and all metal joints are sound-proofed with felt insulation. Body sheets are of 19 gage stock at the hood and cowl and 21 gage for the side panels.

The unusually wide fenders are of full crown one-piece construction of 18 gage stock. The front fenders are cut away at the base to provide for mounting of the tool and battery boxes which are located on the running boards. The roof construction is unconventional in that the upper quarter panels are extended upward and inward beyond the drip mouldings. The roof proper is covered by a layer of black duck, held down with a 1 in. screwed on metal strip to provide water tight joint. An added touch of distinction is secured in the frontal appearance by extending the roof to form a semi-bald overhang as sometimes used on custom built town cars.

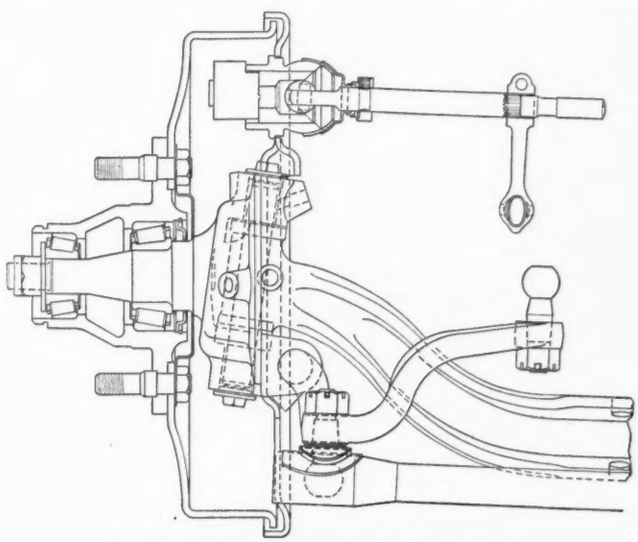
A ¾ in. bead moulding starts at the front of the hood and continues backward to the front pillar where it crosses the cowl just in front of the windshield. Beginning at the front pillar, the double moulding forms a wide belt which is carried aft across the rear panel. On each side, at a point just beyond the rear quarter glass, the belt is joined to a vertical moulding which extends upward to the drip moulding at the top.

Body Details and Equipment

The body hardware in all models is a hammered pattern in Sheffield finish with a chain design on the edges. Fast operating crank type regulators are used on all quarter windows and the Ferro door locks are provided with remote control inside handles. Open bodies are equipped with one piece swing type full plate windshields with nickeled frames. The windshields in the closed bodies are of one piece construction provided with a vertically movable glass operated by an inside handle located on the top header bar. Additional ventilation is secured by means of a cowl ventilator fitted to all models. Instead of the conventional integral sun visor, all bodies are provided with an adjustable Pyralin sun shade which is mounted on the inside.

Horn and light dimming controls are located immediately beneath the all wood steering wheel on an extension from the steering column which extends to the outer edge of the steering wheel rim. Upholstery in all closed models is broadcloth with both the head and side linings trimmed in the same material of identical grade. Silk curtains are provided for the rear and quarter windows while the robe rails are of silk braid with tasseled grabs attached. Hand buffed leather in tones of gray and black is used as upholstery in the open models. Pyroxlyn lacquer exterior finish is used on all body models.

All models are provided with extra tire, tube, cover and Oakes tire lock, Watson stabilators (front and rear), combination tail, stop and backing light, Biflex De Luxe front bumpers and bumperettes, automatic windshield cleaner, Moto Meter and rear vision mirror. In addition the closed models carry Perfection exhaust heaters, smoking and vanity set. The open models carry top boots, and a nickel plated brass bar trunk rack is furnished on all five-passenger closed and four-passenger touring bodies.



Front axle end with front wheel brake

Little Cars Win at Boulogne

THAT a time handicap in direct ratio to piston displacement is quite insufficient to equalize the chances of cars of different size, running in a long distance road race, was clearly proved in the Georges Boillot cup race at Boulogne, Aug. 29. As a consequence, the rules of this race will be entirely changed next year.

The 183 in. cars had to allow 18 minutes to the 91½ in. models, 30 minutes to the 67 in. machines and 45 minutes to the cars of 45 cu. in. piston displacement. The race was won by Andre Lagache, driving a 67 in. four-cylinder Chenard Walcker, who averaged 65.4 miles an hour for 371½ miles over a difficult road circuit, and was never seriously threatened by any of the bigger machines. Leonard, on a similar car, came in second after having been stopped to change a magneto, and De Zuniga, also on a Chenard Walcker, finished third.

The bigger cars, which included 183 in. Aries and Bentleys and a 91½ in. Alvis, failed to go the distance, but never at any time during the race were they able to close up on the Chenard Walckers.

These cars, which have an unbeaten record, are distinctive by reason of their flatiron type of body and the special means of discharging the exhaust gases. There is a vertical intake and exhaust valve in the head of each cylinder, with a supplementary rotary exhaust valve near the bottom of the piston stroke. All other parts of the engine follow standard practice, the crankshaft being a two-bearing type, with plain bearings both for it and the connecting rods. Special drop frames are used, giving a very low centre of gravity, and the bodies are the full width of the car, with both front and rear wheels recessed. In touring car races such as the Georges Boillot cup, full equipment is carried and the cars run without a supercharger, while for open racing events a supercharger is added and some of the equipment is removed. The cars are believed to have a maximum speed of 110 miles an hour.

Another car running in this race with a drop frame and a flat-iron body, full width of the chassis, was a 183 in. Aries. This was ten miles an hour faster than another car of this make having an identical engine and transmission, but with a normal type body and according to the drivers the wide model was infinitely easier to handle. Aries has decided to put the drop frame flat-iron type of car into regular production.

A BILL to repeal the Motorcar Act of 1903 is to be laid before the Ulster Parliament. As the automobile laws of Ulster have hitherto been the same as those in force in Great Britain, it is thought that the suggested laws will be applied ultimately in that country. The new bill recommends the abolition of the speed limit.

Ease of Operation is Chief Feature of New Marmon "75"

Steering improved by use of Marles type steering gear with worm and ball-bearing disk, and gear shifting is made easier by single plate clutch with low spinning weight.

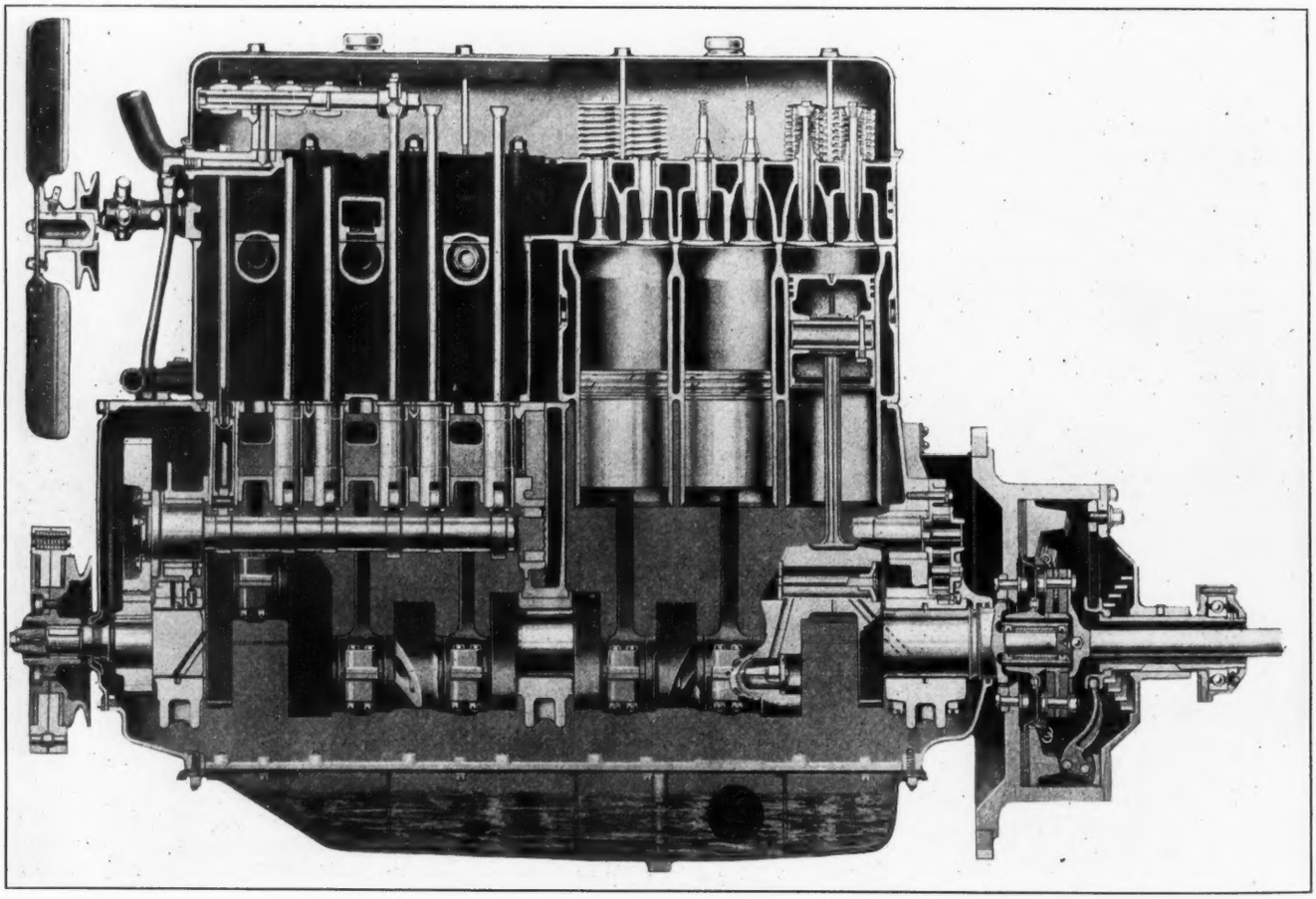
By A. H. Packer

AMONG the outstanding improvements in the new Marmon Model 75, which supersedes the Model 74, is the use of a Marles type steering gear which is of ball bearing construction. Being combined with ball bearing steering knuckles, this reduces friction in the steering mechanism to a minimum. Another improvement that tends to increase ease of handling is the fitting of a heavy duty single plate clutch, the driven member of which has a very low moment of inertia and therefore permits of gear-shifting without annoying clashing.

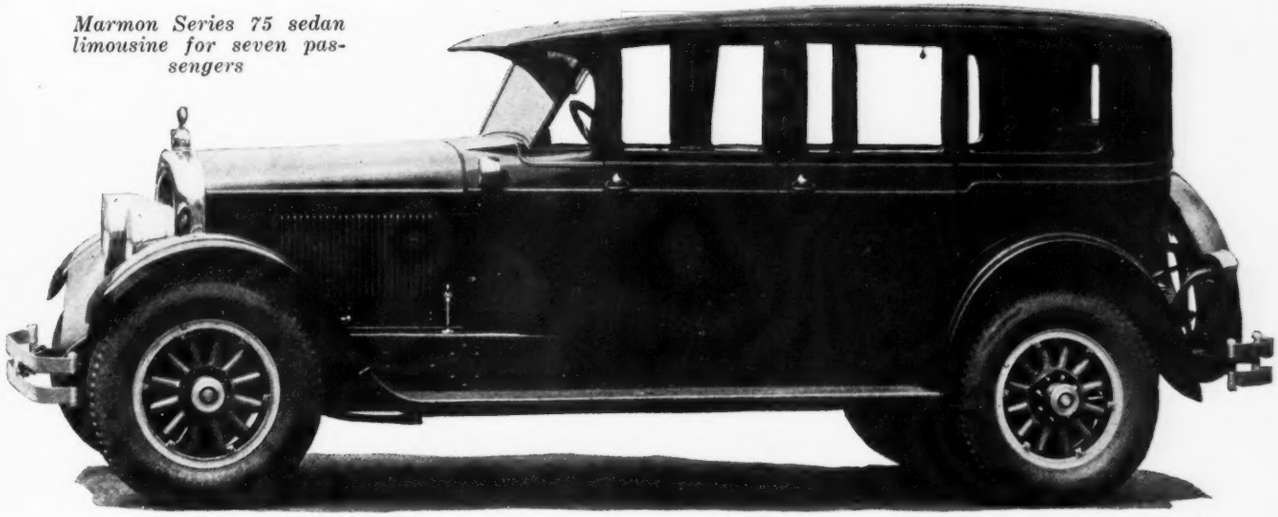
Other improvements and refinements in design include four-wheel Bendix brakes, an improved brake linkage with reduced length of rods, a change in the frame construction at the forward end to provide for bumper anchorage and a new spring suspension, twin headlamps, a new instrument board with Fedco number plate, and a steering stabilizer based on the shock absorber principle and designed to prevent shimmy.

Several improvements have been made in the engine, these including force feed to the center camshaft bearing, a drilled oil duct in the connecting rods to carry oil to the piston pin, the Marmon modulator at the front end of the crankshaft to eliminate torsional vibration, light weight cast iron pistons with three rings, all above the piston pin, an air cushion in the lubrication system, a gap type ignition distributor and two auxiliary breathers to remove moisture from the interior of the valve cover.

Six new body types have been added to the line, four of which are custom-built, and the prices of all models have been revised. On the models which figured in the



Sectional view of Marmon "75" engine showing the new modulator and heavy-duty single plate clutch. The two breathers at top of valve cover are also shown



Marmon Series 75 sedan limousine for seven passengers

previous line the prices have been slightly increased, which is due to the fact that additional equipment is now furnished, including four-wheel brakes, Moto-Meter, Lovejoy shock absorbers, front and rear bumpers, automatic windshield wiper, cigar lighter and bar-type radiator cap. Prices of all of the models are given in the following table, the new models being indicated by an asterisk:

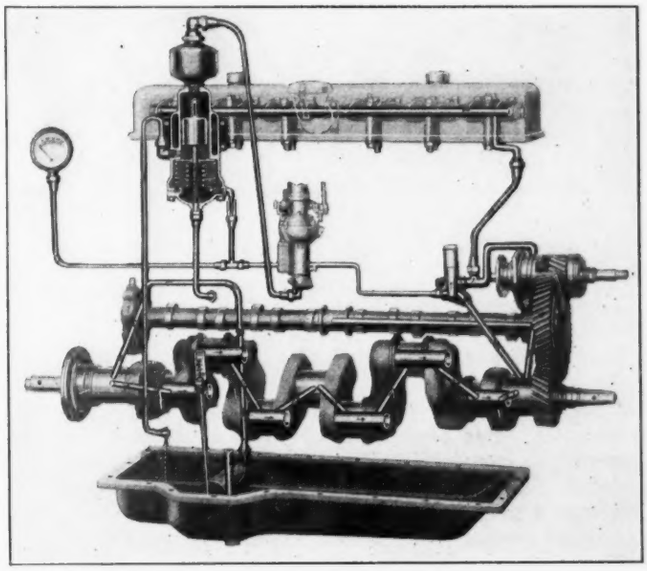
*Five-passenger town-coupe	$3195
Two-passenger speedster	3485
Four-passenger speedster	3485
Five-passenger phaeton	3485
Victoria	3485
Two-passenger coupe	3485
Brougham	3565
*Coupe-roadster	3565
Five-passenger standard sedan	3565
Seven-passenger standard sedan	3640
*Custom-built touring speedster for seven passengers	3565
*Custom-built sedan for seven passengers	4075
*Custom-built sedan-limousine for seven passengers	4175
*Custom-built sedan for five passengers	3960

The new steering gear, to which reference has been made already, comprises a worm and a disk, the latter floating between two ball bearings. As the gear is operated the disk is forced in one direction or the other, and the contact between the worm threads and the disk is a rolling rather than a sliding one, with the result that the steering effort is transmitted to the road wheels with the least possible loss.

In the new front axle the reverse Elliot construction is used and the knuckle pin is included so that its axis produced meets the road at the center of front tire contact. The Bowen system of chassis lubrication feeds oil to a reservoir at the top of the steering spindle, and the ball bearing which carries the weight of the car is mounted in this oil reservoir. Overflow from this reservoir is led to the connections of the drag link and tire rod.

The steering stabilizer, which is of Marmon design, is essentially a Hartford shock absorber. It is mounted on the front axle I-beam and grips the steering cross rod.

Another feature intended to facilitate steering and help in overcoming shimmy is the anchoring of the front spring at the rear, a shackle being used at the front.



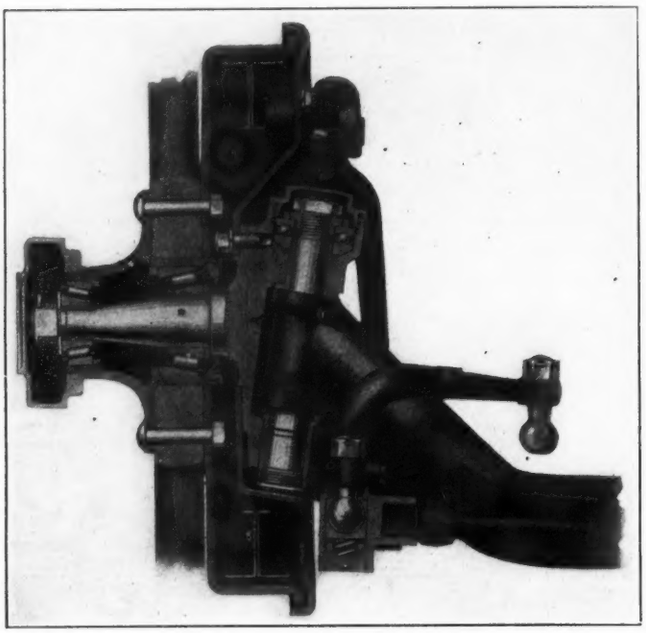
Oiling diagram of Marmon "75" engine

This brings the rear end of the front spring, acting as a distance or radius rod, parallel with the drag link and thus minimizes the influence of spring action on the steering mechanism. With the change in spring suspension the front end of the frame was changed, a heavy forging being used in the side rail channel to provide a rigid mounting for the front bumper.

Operation of the four-wheel brakes is effected by pedal. The emergency brake lever operates the rear brake shoes only. It can also be used as a parking brake, holding the rear brakes in engagement. No equalizers are employed and the adjustment is such that equal braking is obtained on all four wheels.

A cross shaft is mounted at the front end of the torque tube from which the brake effort is transmitted by rods to the rear axle. This construction gives shorter rods than that formerly used and is said to prevent brake rod noise. From the pedal mechanism a rod extends forward to an intermediate lever and a second rod connects to the cross shaft on the front axle. This cross shaft has a heavy center portion and end portions of smaller diameter so that, although the operating lever is located to the left of the center substantially equal

braking force exerted will be at both front wheels, the twists of both ends of the rods being equal, and that of the center portion negligible. A vertical member in the linkage to the front wheel brakes connects to a ball and socket joint located in the knuckle pin axis, so that the

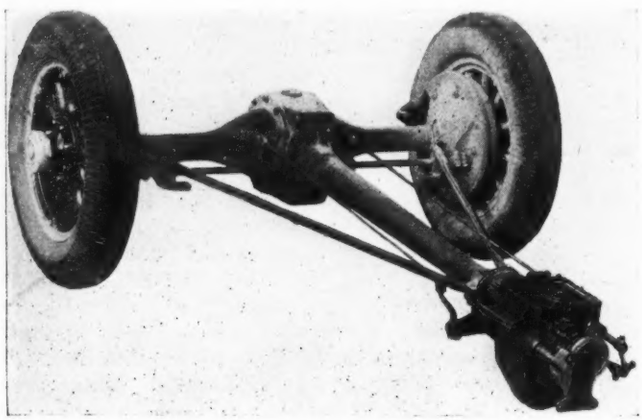


Sectional view through left front wheel of new Marmon, showing steering and brake mechanism.

application of the brakes is not affected by the steering operation.

Reference has been made already to the fact that oil under pressure is now fed to the center camshaft bearing. This makes every bearing in the engine pressure lubricated. The gear type oil pump is driven from the rear of the camshaft and supplies oil direct to the rear camshaft bearing. Oil then goes to the rear bearing of the crankshaft and through the crankshaft to all the other main and connecting rod bearings. The center of each crankpin is drilled out to a diameter of approximately 1¼ in., the ends of the pin then being plugged. These crankpin oil reservoirs are then connected by ⅜-in. ducts drilled through the crank webs, making the whole crankshaft an oil distributing unit.

From the front main bearing oil passages extend to the front camshaft bearing and to the oil relief valve. The camshaft is drilled out from the front end to carry



Rear axle, showing new brake operating cross shaft at front of torque tube.

oil to the center bearing. Before reaching the oil relief valve the oil is taken to an air cushion chamber which is used to prevent excessive pressure rise in the oil lines when the engine is first started in cold weather.

When the engine is first started and the oil is heavy, there will be a flow of sluggish lubricant through the crankshaft to this air chamber, and oil will rise in this chamber, compressing the air. A certain time will thus elapse during which oil can start through the oil relief valve and begin to flow through the other oil lines. As will be seen in one of the illustrations, oil from the relief valve passes to the bearing of the accessory shaft and to the overhead valve rocker shaft. There is also a connection to the oil pressure gage and to the oil purifier which not only filters the oil, but, by means of exhaust heat, distills off the gasoline and water vapors, which are then fed into the carburetor.

The sectional view of the engine shows the construction of the new clutch, while at the front the Marmon modulator is shown. This is essentially a small flywheel, friction driven. The center unit is made in two parts which are separated by three coil springs. These springs push the two halves outward against friction rings which are backed up by two flanges rigidly attached to the crankshaft, one of these flanges incorporating the fan driving pulley.

A mechanical improvement in the starter operating mechanism consists in mounting it on the engine crankcase to insure against misalignment. The pedal also is mounted on the engine and extends through the toeboard. Fenders are now of the full crowned type, except on the town-coupe which uses the paneled fender. An improvement in the interior finish of the closed models has been effected by the use of sponge rubber arm rests at the sides of the rear seats.

A HILL climb from the ground to the roof will mark the inauguration, during the Paris salon, of a 10,000,000-franc garage now nearing completion in that city. Covering a ground area of 45,000 sq. ft., the Banville garage is a concrete six-story structure, having a swimming pool in the basement, covered tennis courts on the roof and a 10 per cent ramp 21 feet wide on the straightaways from the ground to the top floor.

The outstanding feature is the provision of a private box for each one of the thousand cars which it can accommodate. Each box is provided with water, compressed air, electric light and a metal locker for the driver's personal effects or spares. The floor slopes to the rear, where there is a drain, thus allowing the car to be washed in its own box, and all the water is filtered to prevent gasoline or oil reaching the city drains. One of the patented features of these boxes is the use of semi-circular steel and wire netting doors carried on an overhead rail and taking up a position parallel to the partitions between two boxes when opened. The semi-circular shape increases the space available for entering the box and the door is entirely out of the way when opened. The management supplies a lock with an individual key for each box and gives a guarantee against robbery.

The boxes vary in size for cars having overall dimensions from 20 by 6 ft., to 12 ft. by 4½ ft. and the rental, which is practically the same as that of open garages, varies according to the floors, being highest on the ground floor and lowest in the basement and on the sixth floor. The building is steam heated, with hot and cold douches on each floor. To assure perfect lighting, the repair shops are on the sixth floor. Part of the street floor will be devoted to showrooms.

Just Among Ourselves

New Car Stocks Have Been Growing

STUDY of the sales and production figures for individual passenger car companies for the first six months of this year indicate clearly that there has been a definite increase of new car stocks since the first of the year, although detailed inconsistencies in the data make it difficult to calculate exactly how great that increase has been. It seems likely however, that the retailers were carrying in stock on July 1, nearly 200,000 more new cars than they were on January 1. Since the rate of sales has been higher than last year at least a part of these stock increases may be justified, particularly if the high rate of sales is to continue. It is likely, nevertheless, that despite actual shortages in some lines— most dealers have a thoroughly adequate stock of vehicles to handle as they go into the fall season.

* * *

Definition of a Commercial Airplane

HEARD a definition of a commercial airplane the other day which was new to us—and it came from someone who certainly ought to know. W. B. Stout, talking informally at the S. A. E. Aeronautic meeting, said that "a commercial airplane isn't a flying machine—it's a thing which can maintain itself in the air—*financially*." Then he went on to voice the belief that, while cost reduction in airplane manufacture is desirable, the most important considerations from now on should be design to decrease operating costs; that first cost isn't nearly so important. There is much basis for this point of view. Airplane development is almost certain to be much more rapid if the earning capacity of this form of transportation is considered at the same time that design and construction work is going on. And much of American development is very definitly striving to coordinate these factors to the best advantage.

* * *

Something New in Used Car Trading

HERE'S a new one to us in used car trading. An owner of an old car goes around to buy another higher priced used car. He leaves the old car around the corner and inquires about the price of the used car he wants to purchase, presumably on a cash down-payment basis. Then he springs the old car. The salesman, knowing that he can't allow what the customer thinks his car is worth, then whispers to the latter that he will fix it up by raising the price on **both** cars, which in the final analysis amounts to a smaller cash down-payment, a little more interest to be paid and a much greater risk for the finance company or whoever handles the instalment paper on the car. Here is about how it works:

Actual Values	
Used car price	$1000
40% down-payment	400
Trade-in allowance	200
Cash down-payment	200
Balance to pay	600
Fictitious Values	
Used car price	$1200
40% down-payment	480
Trade-in allowance	400
Cash down-payment	80
Balance to pay	720

Thus it appears that the greater the inflation, the less **cash** the purchaser has to put down. Since the amount of down-payment is probably the most important factor in making instalment transactions safe, the increased risk of such procedure is evident. The unpaid balance is increased in the second case, but the total difference between the selling price of the car purchased and the allowance on the old car is less in the second case than in the first; in other words, the dealer gets less total money on the whole transaction but permits the unpaid balance after the down-payment to be greater.

* * *

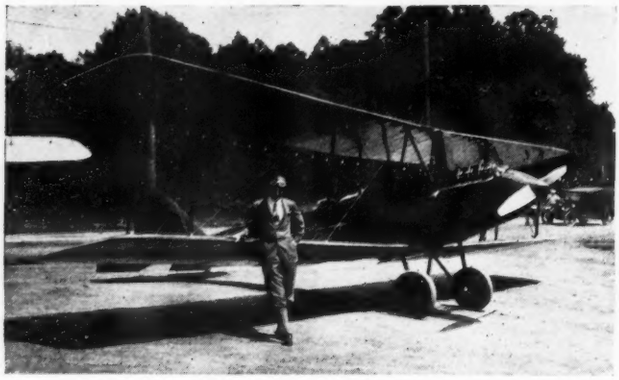
Business and the Weather Outlook

WE note with particular interest a topic on the program of Babson's National Business Conference which is taking place this week—"What the weather outlook means to business." It's always been a source of some doubt to us as to how much the automobile business actually is influenced by weather conditions. That there is some effect is certain, but on numerous occasions it has seemed to us that the weather has been blamed for dips in the sales curve which might have been attributed more properly to other factors in the economic situation.

* * *

Mr. Willys and His "Ice-Cold" Whippet

WE ran across this in a British contemporary: "At the luncheon of welcome to Mr. John N. Willys at the Savoy Hotel last week, when he introduced the new Overland Whippet, a full-sized model of a Whippet in ice on an illuminated glass stand graced the chairman's table. During the luncheon this commenced to display signs of distress and collapse seemed inevitable. It was about the time that Mr. Willys was telling his audience that the Whippet was a 'little car that hangs low to the ground' that the ice model made its final exit and disappeared on the floor with a resounding thud. Roars of laughter followed this unrehearsed incident. On resuming Mr. Willys calmly remarked that the engine was still cool and the radiator was not leaking."—N. G. S.



Pitcairn passenger plane which is the lowest price modern design machine yet put on the market, selling for $2000. It carries two passengers and has a 90 hp. Curtiss engine

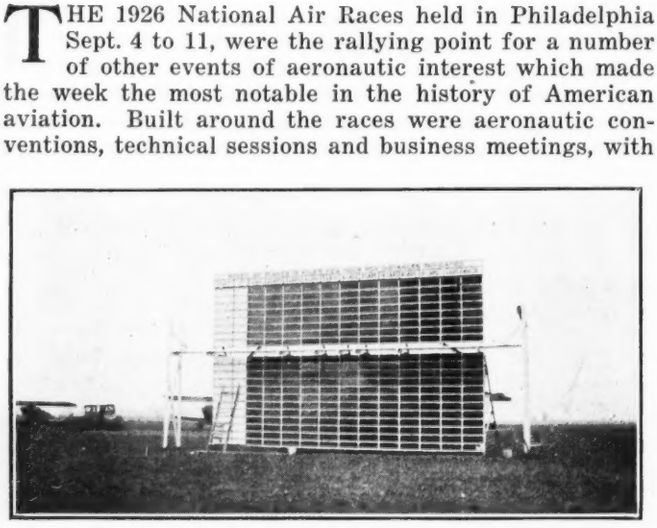
This is another Pitcairn plane seen at the races, the Sesqui-Wing model, designed for sport and racing events. It is powered with a 160 hp. Curtiss engine and carries two

Practically All Planes at Air Races Modern in Design

Old crop of "flying crates" disappearing. More engines of high-efficiency type in use but high prices still cause many to stick to clumsier types.

By Leslie S. Gillette

THE 1926 National Air Races held in Philadelphia Sept. 4 to 11, were the rallying point for a number of other events of aeronautic interest which made the week the most notable in the history of American aviation. Built around the races were aeronautic conventions, technical sessions and business meetings, with

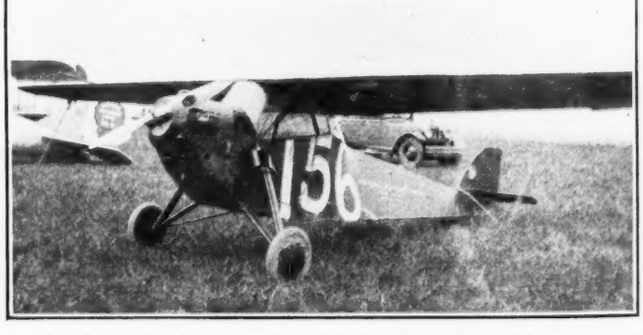


One of the score boards in front of the grandstand at the National Air Races. Lap time of each entrant was shown for every race

the Sesqui-Centennial Exposition and the Naval Aircraft Factory as highly interesting side attractions.

While the Model Farms Field, where the races were held, was the mecca of thousands of air enthusiasts who stood thrilled by the maneuvers of planes overhead, elections, resolutions and engineering discussions of utmost importance to the industry, were taking place elsewhere in the city. During the air race period, three important "air" banquets were held, these being the S. A. E. Aeronautic Dinner, the Commercial Aviation Dinner, sponsored by the Aero Club and Pennsylvania, American Society of Mechanical Engineers and the Engineers' Club of Philadelphia, and the National Aeronautic Association Banquet. At each of these three affairs, at least two of the three newly appointed assistant secretaries of aviation were prominent speakers.

Turning to the air races themselves, approximately 60 commercial planes, some flying from California and Texas, were assembled on the newly completed Model Farms Field, which was set aside specially for the air races and to accommodate the civilian planes. This field, located less than six miles from the center of the city, was equipped with great care to handle the races. Reserved seating accommodations for 1100 spectators were established in front of the "home pylon" where all planes



Enclosed cabin Driggs "Dart" monoplane which was entered in several of the light plane events. It was also in the Ford Tour

Axleless undercarriage employed on the Verville "Airster" planes. Shock absorbers and brakes are fitted

The K.R.A. light monoplane powered with a 28 hp. two-cylinder Wright-Morehouse air-cooled engine

were required to start, finish and make the turn in front of the judges' stand when circling either the 12 or 5-mile triangular course. For night flying, a 500,000,000 candlepower B. B. T. floodlight and a 2½-second flashing beacon were provided in addition to the regular lights to guide the planes in landing. The Navy Flying field housed 50 odd Navy planes which arrived from distant stations to participate in the races in addition to the quota of planes regularly stationed there. The Pitcairn Field, located some distance from the city, provided accommodation for the Army planes besides several commercial planes.

Several types of Army and Navy planes participated in the special service events, although the majority of contests were for various classes of commercial planes. Stunt flying, parachute jumping, airplane relay races, and "dead stick" landing contests were included in the program. The greatest interest was created by the arrival of the U. S. airship Los Angeles which landed at the Model Farm Fields on Friday to take on water ballast.

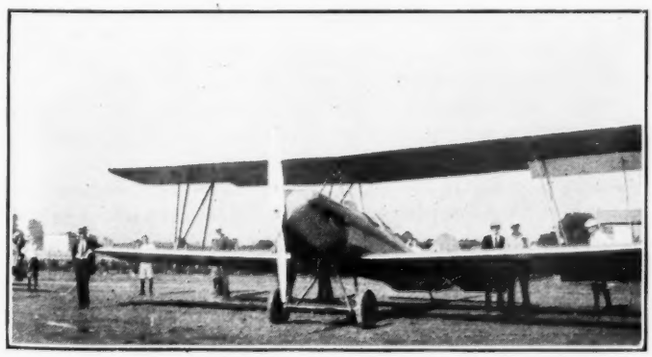
Cash prizes, aggregating almost $30,000, the largest sum ever raised for commercial airplane contests, besides numerous trophies and other awards, failed, however, to bring the number or variety of planes expected to participate in the races. In the air races of the last two years, which ran for only three days instead of the seven of 1926, more than 500 airplanes attended while the record number of spectators in each case was greater than 50,000, whereas this year the total number of planes present was less than 150, while the greatest number of spectators attending on any one day did not exceed 10,000.

Several factors were responsible for the conditions this year and chief among these may be mentioned the unfavorable weather which preceded and attended the races. Moreover, many of the newer planes are engaged in regular commercial enterprises and could not be spared to attend. The omission of the Pulitzer Speed Classic may also have been partly responsible for the lack of public enthusiasm.

Reviewing the commercial planes attending the 1926 races as compared with the planes present at the previous annual air meets, there was one outstanding feature which, in itself, offers positive proof of the development which has taken place in aviation during the last 12 months. Our old "flying crates" are almost extinct—there were only two commercial machines present which could be placed in this category and, except for a few well-built war planes which had been preserved and remodeled expressly for racing, the machines were of modern design and built within the last two years. There was a marked increase in the number of planes equipped with modern high-efficiency engines but the majority of the machines are still compelled to cling to the older types of powerplants pending the marketing of a lower priced modern engine, and there is a real and immediate market for an engine of this type.

Undoubtedly the absence of a low priced engine has, in one sense, been an aid to progress of aerodynamic design as the newer planes powered with the war-time engines

Several machines at the races had the list price prominently displayed. The Travel Air shown here was among them

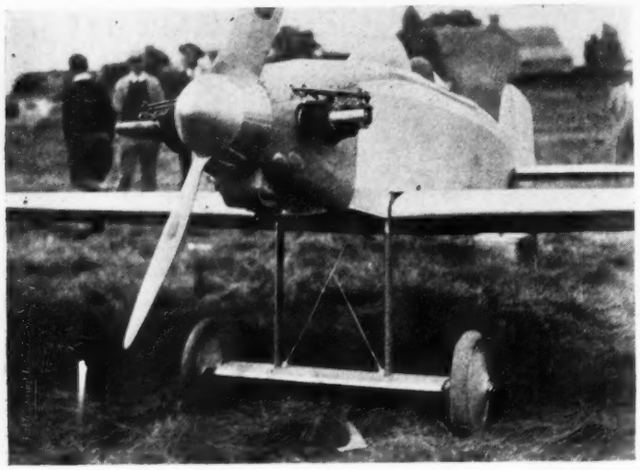


The Alexander "Eaglerock," one of the newest low-price commercial planes. It employs a Curtiss 90 hp. engine

are superior in performance by several hundred per cent to planes of a few years ago equipped with similar engines. One plane in particular, the Fairchild Monoplane, shows what can be done in the way of adapting an older type powerplant to a modern plane. This plane of three place capacity with a totally enclosed cabin has a maximum speed of nearly 100 m.p.h. Other machines of the open cockpit type like the Waco, Travel Air and Eaglerock are good examples of high efficiency modern design planes which perform well with these powerplants.

It can hardly be said that the planes, viewed as a whole, were entirely representative of the latest Ameri-

can commercial design, with such examples as the Stinson "Detroiter" and the Ryan Monoplanes not attending the meeting. There were, however, a number of new machines present. The Wright-Bellanca, a six place completely enclosed cabin monoplane powered with one of the new Wright J-5 engines, was especially interesting.



An unusual form of undercarriage is used on the K.R.A. light plane. Inside the fuselage the rubber cord shock absorbers are attached to the two vertical struts of the undercarriage

It proved conclusively that by proper streamlining and design a cabin ship can be built which is not only just as fast as open cockpit type airplanes of similar power, but which combines with this speed of efficiency based on pay load carried per horsepower, speed, and fuel consumption, which is even superior to the open cockpit types. Something very close to the world's record must have been established by this plane when it carried over 3100 lb. of useful load with its 200 hp. engine in one of the races.

A Vought bi-plane, similar to those adopted by the Navy for shipboard use, also made its appearance among the privately owned machines, while the Pitcairn Sesquiwing with a Curtiss C-6 engine provide that it was several miles faster than "Casey" Jones' famous Oriole which has formerly won practically all the races in its class, chiefly due to its wonderful piloting. Perhaps one of the most interesting exhibitions was that given by Major Schroeder in the Fors all-metal three-engined monoplane. This ship is fitted with hydraulic brakes on the landing wheels and, due to this feature, can be handled on the ground almost like an automobile. The facility with which a plane can be handled in the air was also shown by Major Schroeder, who cut the Ford plane around the home pylon in one of the races like a pursuit ship, with his lower wing only a few feet from the ground. It was noticed also that wooden propellers were being used on the Ford plane. Major Schroeder explained the reason for going back to this type, ascribing the practically simultaneous failure of two engines in this ship in the Ford Reliability Tour to probable harmonic vibrations between the duralumin propeller and the all-metal fuselage. Since installing of the wood propellers no further trouble has been experienced.

The Verville "Airster" which won second place in the Ford Reliability Tour participated in the races. It employs a 200 hp. Wright air-cooled engine

Compared with the total number of planes of conventional design and size present, there was an increase in the number of "light" planes attending, this being doubtlessly due to the greater number of events for small planes which had been put on the program in order to encourage development of this type, which is ideally suited for sport or pleasure purposes. Before such a plane could become popular in this country, however, landing speeds will have to be reduced considerably, at least judging by the examples present at the National Air Races. A noticeable feature in connection with the light planes was the change in style of powerplants. With the introduction in this country of the light type of plane three years ago, converted motorcycle units were used as powerplants. Last year saw a reduction in the number of planes so equipped while the five strictly "light" planes attending the races this year were fitted with engines developed especially for this form of service. Four machines were equipped with two-cylinder, horizontal air-cooled 80 cu. in. displacement engines, two of these being of Wright-Morehouse make and two of English manufacture. Differing from the practice three years ago, the present light planes are mostly of the cantilever monoplane type, and, in one case, the Driggs "Dart," the pilot sits in a totally enclosed cabin.

Cooperating with the National Air Races, the Naval flying field was unusually active. Many of the Government's latest planes were there and an inspection proved that the commercial side of aviation is not the only one that is making rapid progress. Not so very long ago it would have created amazement in air service circles that a dozen or even half a dozen pursuit planes could be flown at full throttle for practically an hour without a single forced landing. Yet this is exactly what happened this year. The planes moreover did not land at the Model Farms field either before or after the race, but arrived and left from the Navy field in formation.

Judging from the planes on the field it appears the Navy is leaning toward air-cooled engines in most of its planes up to 300 hp. Beyond this the Packard 1500 water-cooled engines of 550 hp. are superseding the old reliable Liberty engine, while the Curtiss D-12 is still much in favor. In the heavy duty field the 2500 Packards of 800 hp. are becoming more general. In the Navy aircraft factory the Navy's twin-Packard-engined flying boats, used in the Pacific flights, were being reconditioned. Loening amphibians with duralumin hulls were in process of overhaul, the Curtiss Navy Racer, winner of last year's Pulitzer Race, was being put into shape and fitted with floats to defend the cup in the coming Schneider Cup Seaplane Race, and extensive development work with duralumin hulls, floats and similar structures was progressing.

Due to the lack of necessary appropriation to build new racing machines and the absence of foreign entries, the Pulitzer Race, long the premiere event of the National Air Races, was cancelled this year. A squadron of the Army's Curtiss "Hawks," single seater pursuit ships, fitted with detachable aero foil section fuel tanks

"Casey" Jones' Curtiss "Oriole" plane powered with a Curtiss 160 hp. engine, which won several of the races

The new Bellanca enclosed-cabin monoplane powered with the latest Wright J-5 air-cooled engine. It is a six-passenger machine

below the fuselage to provide sufficient fuel for flights of long duration, were among the most interesting of the planes. The new Huff-Daland "Cyclops" single-engined bombers fitted with Packard "1500" engines were present and showed their excellent performance by winning the race for large capacity military airplanes hands down. Navy Vought UO-2 observation planes, having Wright "Whirlwind" powerplants and fitted with either a wheeled undercarriage or a single float pontoon, were very much in evidence, the latter type being frequently shot-off from a catapult situated on the side of a dock and only a few feet above water-level.

On the far side of the field a regular station had been erected for the Philadelphia-Washington Air Line. Three-engined Fokker monoplanes, operated by the Philadelphia Rural Transit Co., are employed exclusively in this service. Every convenience associated with other forms of public service lines, such as waiting rooms, time tables, attendants, etc., were provided for the comfort of the passengers and public.

Two single-seater pursuit ships of the Navy were seen powered with the new air-cooled radial engine of 425 hp., manufactured by the Pratt & Whitney Aircraft Co. One of these, the Wright "Apache," put up a speed of only 2 miles per hour less than that of the pursuit ships powered with water-cooled engines. Other air-cooled engines, besides engines on the "secret list," were seen undergoing dynamometer tests in the sheds.

Results of 1926 National Air Races

Place	Pilot	Plane	Engine	Horse-power	Speed
ON TO THE SESQUI RACE					
(Open to any make or type of civilian aircraft. Prizes, $4,000)					
1st	F. D. Hoyt	Travel Air	Curtiss OX	90	2558*
FIRST ELIMINATION FOR AERO CLUB OF PENNSYLVANIA TROPHY					
(Race for two or more place low-powered civilian airplanes. Prizes, $1,250)					
1st	B. S. Rowe	Thos. Morse	Aero Marine	80	109
2nd	R. P. Hewitt	Waco 9	Curtiss	90	...
INDEPENDENCE HALL TROPHY					
(Free-for-All Race for two, three or four place civilian airplanes. Prizes, $2,500)					
1st	C. S. Jones	Curtis "Oriole"	Curtiss	160	136
2nd	J. G. Ray	Pitcairn	Curtiss	160	127
MULVIHILL MODEL TROPHY					
(Duration Race for model airplanes. Prizes, $500)					
1st	Jack Loughner	Own model	Rubber Band	2 h. 32 m.†	
2nd	J. A. Lucas	Own model	Rubber Band	2 h. 9 m.†	
"B. B. T." TROPHY					
(Novelty Relay Race for commercial planes. Prizes, $1,000)					
1st	Rowe Team	T. Morse & Waco	Curtiss	90	86
2nd	Ludington Team	Waco	Curtiss	90	..
NATIONAL GUARD TROPHY					
(Speed Race for JN type planes for pilots and national guard planes. Prizes, $1,000)					
1st	Carl W. Rach	Curtiss JN	His-Suiza	180	93.1
2nd	Carl J. Sack	Curtiss JN	His-Suiza	180	88.7
SCIENTIFIC AMERICAN TROPHY					
(Sport Plane race for Civilians only. Prizes, $1,500)					
1st	A. H. Kreider	KRA Midget	Wright	28	94.4
2nd	E. B. Heath	Heath Sport	Bristol	32	91.3
DAYTON DAILY NEWS TROPHY					
(Race for Light Airplanes for Civilians only. Prizes, $1,500)					
1st	E. B. Heath	Heath Sport	Bristol	32	86.5
2nd	H. J. Laass	Driggs "Dart"	Wright	28	82.8
"BENJAMIN FRANKLIN" TROPHY					
(Novelty Relay Race for Civilian pilot and commercial airplanes. Prizes, $1,000)					
1st	Rowe Team	Morse & Waco	Curtiss	90	118.8
2nd	Ludington Team	Waco 9's	Curtiss	90	116.5
SECOND ELIMINATION FOR AERO CLUB OF PENNSYLVANIA TROPHY					
(Free-for-All Race for two or more place low-powered civilian airplanes. Prizes, $1,250)					
1st	F. D. Hoyt	Travel Air	Curtiss	90	96.6
2nd	D. H. Davis	Travel Air	Curtiss	90	95.6

* Miles covered. † Duration.

Place	Pilot	Plane	Engine	Horse-power	Speed
AERO DIGEST AND "BETSY ROSS" TROPHY					
(Speed and Efficiency Race for Light Airplanes open to Civilians only. Prizes, $2,000)					
1st	E. B. Heath	Heath Sport	Bristol	32	....
2nd	H. J. Laass	Driggs Dart	Wright	28	...
AVIATION TOWN AND COUNTRY CLUB OF DETROIT TROPHY					
(Light Commercial Speed and Efficiency Race open to civilians only. Prizes, $2,500)					
Speed					
1st	J. G. Ray	Pitcairn	Curtiss	150	136.4
2nd	C. S. Jones	Curtiss	Curtiss	160	132.1
Efficiency					
1st	C. C. Champion	Wright-Bellanca	Wright	200	$1,292 lb.
2nd	Walter Beech	Travel Air	Wright	200	$ 600 lb.
FINAL RACE FOR AERO CLUB OF PENNSYLVANIA					
(Free-for-All race for Two or more place low powered civilian airplanes. Prizes, $2,000)					
1st	R. P. Hewitt	Waco 9	Curtiss	90	107.5
2nd	Basil Rowe	Thomas Morse	Aeromarine	80	104.3
"VALLEY FORGE" TROPHY					
(Precision Landing Contest for Civilian or commercial planes. Prizes, $500)					
1st	Douglas Davis	Travel Air	(Engine dead) ..	5 ft.‡	
2nd	J. G. Ray	Pitcairn	(Engine dead) ..	7 ft.‡	
LIBERTY ENGINE BUILDERS TROPHY					
(Race for Military Observation Type (Two-place) Airplanes. Prizes, Individual Trophy Awards)					
1st	Capt. L. O. Stevens	O-1	.....	..	142.3
2nd	Capt. A. Hornsby	O-1	.....	..	141.7
"LIBERTY BELL" TROPHY					
(Race for large capacity airplanes Military. Prizes, Individual Trophy Awards)					
1st	Lt. K. M. Wolfe	Huff-Daland	Packard	800	123.7
2nd	Lt. Kenneth Walker	Huff-Daland	Packard	800	119
JOHN L. MITCHELL TROPHY					
(Race for pilots of the First Pursuit Group. Prizes, Individual Trophy Awards)					
1st	Lt. L. G. Elliott	Curtiss	Curtiss	450	160.4
2nd	Capt. F. H. Pritchard	Curtiss	Curtiss	450	160.2
DETROIT NEWS AIR TRANSPORT TROPHY					
(Air Transport Speed and Efficiency Race open to Civilians. Prizes, $2,500)					
Speed					
1st	C. C. Champion	Wright-Bellanca	Wright	200	121.5
2nd	L. G. Meister	Buhl-Verville	Wright	200	120.0
Efficiency					
1st	C. C. Champion	Wright-Bellanca	Wright	200	1,650 lb.¶
KANSAS CITY ROTARY CLUB TROPHY					
Free-for-All Military Pursuit Ship Race. Prizes, Individual Trophy Awards)					
1st	Lt. C. T. Cuddihy	Boeing FB-3	Packard	600	180.5
2nd	Lt. L. G. Elliott	Curtiss P-1	Curtiss	450	178.6

¶ Pay load. § Useful load. ‡ From mark.

Production Problems Are Discussed at Machine Tool Show

Papers on a wide range of subjects are presented at technical sessions arranged by American Society of Mechanical Engineers in connection with New Haven exhibit. Standardization pushed.

IN connection with **the annual machine** tool exhibition at Mason Laboratory of Mechanical Engineering in New Haven last week there were held a number of technical sessions arranged by the American Society of Mechanical Engineers, at which were discussed problems arising in the production of machinery and mechanical equipment.

The program showed considerable variety, listing papers devoted to production methods, points in the design of machine tools, inspection and setting of tolerances, and the training of machinists by apprenticeship systems.

A number of committee meetings were also held, at which the standardization of various machine tool parts was discussed. Thus, on Wednesday there was a meeting of the Sectional Committee on the Standardization of Plain and Lock Washers; on Thursday a meeting of the Central Committee on the Standardization of Small Tools and Machine Tool Elements and a conference on the standardization of milling cutters, while on Friday Sub-Committee No. 5 on Woodruff Keys of the Sectional Committee on the Standardization of Shafting met and organized. A meeting was held by a committee on the standardization on machine tapers.

Among the papers presented was one on "The Influence of Elasticity and Errors in Tooth Shape on Stresses in Gears." This was prepared by John Edward Nicholas of Cambridge, Mass., forming part of a thesis submitted by him to the Massachusetts Institute of Technology for the Degree of Master of Science. It is based on experiments carried on with the Lewis machine for testing gears and was presented to the A. S. M. E. in the form of a progress report of its Special Research Committee on Gears. Tests were made on combinations of steel gears with steel pinions, cast iron gears with cast iron pinions and cast iron gears with steel pinions.

The first step of the work consisted in measuring or determining the errors of the gears to be tested, and for this purpose use was made of both an indicator and an odontometer with chart. For testing the gears at speed the initial pressure between the mating teeth was established by means of the torsion of the telescope shafts bearing the gears. The motor and recording mechanism were then started and the speed increased until the breaking of contact between the teeth, due to the speed of the gear, was announced to the observer by the clicking of the telephone receivers.

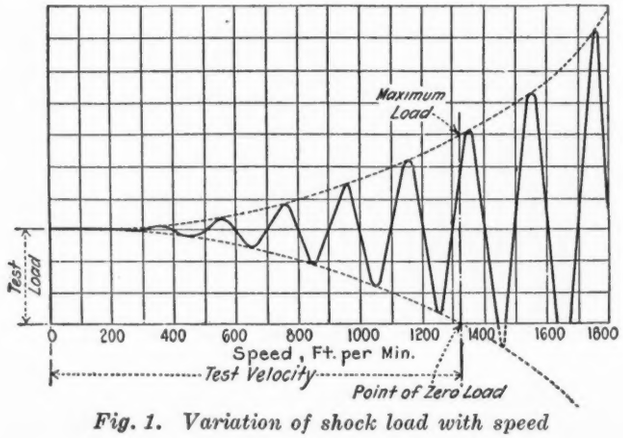


Fig. 1. Variation of shock load with speed

These observations were repeated for various initial loads, which established the relation between speed and increment loads as affected by the various factors, of speed, error, elasticity of materials, and other factors which remain to be determined.

Increment Load Due to Speed

At low speed the pressure on the teeth is substantially constant, but as the speed increases it rises and falls (Fig. 1), maintaining a constant mean, until at some definite speed the contact is broken on the tooth of maximum error. The zero load is the reaction of the maximum load on the tooth after the instant of impact. And it is at this instant that the first click is heard on the telephone receivers at that speed. This maximum load is very nearly equal to twice the static or measured load as shown on the diagram. For this load, if the speed is increased the breaking of contact increases until it sounds like miniature thunder or static in a wireless set. With a balanced condition, that is, when the increment load is approximately equal to the static load, the influence of breaking in contact is transmitted through the flexibility of the pinion shaft from the test gears to the master gears at a slightly greater speed.

The paper was accompanied by numerous graphs showing the increase in the tooth load with the pitchline velocity in different runs. From the tests made so far the following conclusions were drawn:

The general conception is that the velocity factor for a given pair of gears is constant, regardless of intensity of load. All previous tests have been made with cast-iron gears run to destruction. If on these tests at a given velocity the gear failed with a load of one-half its static strength, it was assumed that at any other load the equivalent static load would be double the transmitted load.

Such tests invariably showed a rapid fall of strength at low velocity and a lesser reduction as the velocity increased. This seems contrary to the conception that the additional or increment loads were caused by variations in velocity due to errors, as with rigid solids. Such loads should vary as the square of the velocity. It was admitted that the elasticity of the material would tend to reduce the effect of these errors, but it was questioned whether or not this effect would be sufficient to account for the big

difference in the shape of the curve as determined by breaking tests and the curve representing rigid solids.

Conclusions from Gear Tests

These tests made it possible to obtain a better idea of the effect of the various factors involved in the strength of gear teeth.

1. The velocity factor is not constant, but depends also on the intensity of the load.

2. Under balanced conditions, such as were maintained in these tests where the additional load was approximately equal to the transmitted load, the curve representing these loads followed in general the shape that would be obtained from rigid solids.

3. The influence of the elastic properties of the material was very apparent and flattened the curve out more and more as the loads and speeds increased, thus counteracting the influence of errors.

4. The influence of error is very pronounced, and seems to be directly proportional to the load required to keep the teeth in contact, thus building up increment loads which are very nearly equal to the transmitted load. By introducing the effect of change in load by using data from Professor Marx's tests, it was possible to reconcile the idea of increment loads as caused by errors with results of previous breaking tests on cast-iron gears.

5. Suggestions for further tests to obtain more definite values for the effects of other factors, such as material, tooth form and pitch.

6. For the same extent of error the increment loads are less for a pair of meshing gears of softer materials, due to the reduction in their modulus of elasticity.

7. The noise of a pair of gears seems to be directly proportional to the extent of error. The noisiest pair of meshing gears, while running was that having the largest error. With the same error and different materials the noise is not as great.

Tooth Error and Noise

8. Run D which showed the maximum indicator error of 0.0043, proved to be the noisiest of the series. In this run the pinion had a normal pitch specified error of 0.002 in one tooth only. Thus when runn ng at a 1000-ft.-per-min. pitch-line velocity and static load of 725 lbs. it caused distress on the master pinion. This distress showed up on every sixth tooth of the pinion and gear, the master set. The number of teeth being 18 and 48 for pinion and gear and greatest common divisor is 6—hence the symmetry for distress as they meshed in running. It is interesting to note that it was the master set that took the brunt, whereas the pinion with the error remained untouched and smooth. When signs of distress show up, the limit of safe load has been reached and any further running ruins the gear very rapidly.

9. Since the increment loads may be equal to or greater than the static load,and directly proportional to the errors, the error should be kept to a minimum to insure safe stress and durability.

10. The derived tentative formula is cumbersome in its use; however, a table containing various factors involved, based on unit L/f, where f is the face of the gear in inches, with different combination of materials, pitch and of factors as well as velocities, will be compiled, which will permit its use with ease.

The tentative formula referred to is

$$L = \frac{V^{3/2}\, e y_1 y_2}{\sqrt{p}\left(\frac{1}{E_1}+\frac{1}{E_2}\right)(1200+V)(y_1+y_2)} C_4$$

L is the load on the testing machine required to keep the teeth in contact in pounds.
V=pitch line velocity, in ft. p. m.
E=tooth error.
Y_1 and Y_2=Lewis strength factors for pinion and gear, respectively.
P=circular pitch.
E_1 and E_2=moduli of elasticity of pinion and gear materials, respectively.
C_4=a constant whose value is approximately 0.030.

E. V. Crane, staff engineer of the E. W. Bliss Co., Brooklyn, N. Y., presented a paper on "Cold Press-Finishing of Metal" in which he described various uses of power presses for working metals in comparison while cold. There are essentially four methods of thus working metals. Usually the least severe, comparatively, is the mere sizing, flattening, or surfacing of forgings, stampings, or castings, accompanied by very little reduction of thickness.

Second is swaging, cold forging, or upsetting where a suitable blank or slug is forced into a desired shape to save machining operations, usually involving considerable reduction of thickness in some portions but characterized by considerable unrestricted freedom of flow.

Third is coining, stamping, or embossing where the metal, pretty well confined and usually in comparatively thin sections, may be forced to flow to fill the shape and profile of the dies.

Theory of Cold Working Process

Fourth is extrusion where the metal is forced to flow plasticly through an orifice of whatever shape, being otherwise confined. This is quite limited as to metals and applications and will be considered as outside the scope of this paper.

In all four classes the metal must be squeezed beyond its elastic limit in compression. The deformation takes place as sliding along the slip planes of the crystals, resulting where the deformation is considerable in appreciable reduction of grain size and hardening of the material. If it is desirable, the original grain size can again be approximated by suitable annealing after the squeezing operation.

Under the first classification, sizing work, where the metal is ordinarily not displaced appreciably and such flow as occurs is not restricted, the most general application and the one receiving most attention at this time is sizing drop forgings. The object of course is to squeeze the boss surfaces of the unfinished forgings accurately to size so that the usual milling or grinding operations are eliminated. The division of the General Motors Corporation which furnished samples to the author, advised that their usual tolerance for such work was=0.001 in. This is closer than tolerances ordinarily allowed on the milling of similar parts.

The dies for sizing bosses are usually plain blocks with comparatively large surface area so that the forging need not be located with especial care. Under favorable conditions one operator and one press can size cold four to eight or ten times as many parts as can be milled or ground by one operator with a suitably rigged machine, and where the quantity is sufficient and the shape of the part is adaptable, a magazine-type push feed can be applied to the press and production rate further increased.

Sizing of forgings is not limited to the flat surfaces of bosses. Rounds, bevels, sides, tapers, flanges and even the inner surfaces of punched holes can be sized smooth and accurate. One thing to watch especially is sizing steel is to have ample space for the free flow of the metal, not to restrict it so that the pressure builds up. A certain

amount of restriction is possible when necessary but it necessitates greater care in construction of the die and the life of the steels is proportionately reduced. It is of interest to note that forging a depression in the center of the bosses, as in the case of the shift levers at the sides in Fig. 5, reduces the area, prevents pyramiding of pressure at the center which is hard on the dies in the case of a large-area squeeze, and localizes any deformation at the ends of the boss.

The usual finish allowance for work of this character is 1/32 in. and in some cases 1/16 in.

Most Suitable Press Capacities

It may be noted that 400, 600 and 800-ton capacity presses have proved to be the most satisfactory for the general run of automobile forgings.

Another line of work under the first classification but not as common as the above is the sizing of castings. Many brass, bronze, aluminum and alloy castings and some steel and malleable castings lend themselves to cold sizing and surfacing methods. The bosses of some L-shaped cast brake levers are thus squeezed to size.

In the case of brass there is an increasing tendency to go to hot press forgings for many shapes, the accuracy of which can be held very nearly as close as what could be obtained by cold sizing.

Another application of coining methods to castings is found in the preparation of some classes of hardware for plating. The surface of the casting can be coined sufficiently smooth to eliminate or greatly reduce the preparatory hand-work and buffing. A cast handle for operating the windows of closed cars is coined in this manner for nickel plating, a fin of surplus metal being forced out which must be shaved off later. The pressure required for such a job is likely to run about 90 tons per sq. in. of projected area.

It may be of interest to note here a type of riveting from the stock involving cold squeezing. The equipment was built for the Ford Motor Co. for riveting a spring-steel vibrator to a steel bridge piece. As illustrated in Fig. A, the vibrator is previously punched and the two pieces are

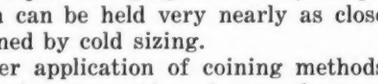


Fig. A

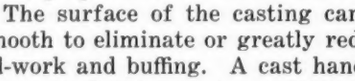


Fig. B

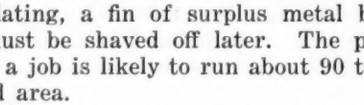


Fig. C

fed into the dial feed in (Fig. B) proper relation. At the working position the plain round punch descends forcing some of the metal down through the hole in the vibrator. The die is so arranged, however, that the metal is turned back at edges as it comes through completing the riveting in one stroke of the press. This equipment is operated at the production rate of about sixty assemblies per minute.

Distinctly in the second classification of swaging, cold forging, etc., combining great accuracy required and severe working stresses, are a quantity of odd shaped pieces squeezed to shape out of solid metal for parts for speedometers, electrical equipment, etc. In pieces which have a boss, hub, or other portion higher than the rest of the piece and left so by squeezing down the metal around it, there is a tendency in the process to drag down the corners and edges of such high parts. To minimize this tendency it is often advisable to use a medium hard stock and if necessary to arrange the dies to strike the high part at the end of the stroke to size it off a little. There may be considerable variation in the pressure required for this work on account of the area and thickness relation. For practical cases, however, with a free flow relief all around it is well to figure 100 tons per sq. in. and higher on the total area squeezed for steel and around 75 tons per sq. in. for copper.

Under the third classification, coining, stamping, embossing, etc., comes a variety of work in which the metal is made to flow comparatively little but is subjected to extremely high pressures to bring out sharp designs or lines or to obtain a very accurate surface. On most of this work the metal is either completely contained in a closed die or practically so, with the result that there is no outlet or relief for the flow of surplus metal. Under such conditions, if care is lacking and oversized stock is used or adjustments are carelessly made, the pressure may build up to several hundred tons per square inch with serious consequences to the equipment.

Brigadier General C. L. H. Ruggles, in a paper entitled "Sane Specifications and Intelligent Inspection," stated that during the World War much difficulty arose because the close tolerances which had proven practicable and satisfactory previously in producing ammunition on a small scale were found not applicable to manufacture on a large scale.

Specifications and Inspection

It is the present problem of the Ordnance Department to work out designs and specifications which are proper compromises between the quality and quantity viewpoints, and in this work the assistance of practical manufacturers is needed. As fast as it can be shown that tolerances on certain of the dimensions can be increased without appreciable loss of effectiveness, then such increases will be made. On the other hand, when it is shown that small tolerances are essential, it is believed that manufacturers will proceed to work out methods for obtaining these refinements as they did during the World War, when the necessity could actually be demonstrated.

"Group Drive and Individual Motor Drive" in machine shops was discussed in a paper by H. F. Penney, of the General Electric Co., Schenectady, N. Y. The author generally favored individual motorized drives for most cases, but he said in conclusion that group driving will not go out of use unless there were very unexpected developments in the motor field. It is not felt that there is now or likely to be any hard-and-fast rules which will prevent the installation of either the individual or the group drive. There are too many factors involved, all of which must be given the proper weight when it comes to making a decision of this character. There are advantages and disadvantages to either of the two systems, and the former must be weighed against the latter as to what will be the result in the way of final cost at the end of the year. There are, of course, certain industries in which it would seem perhaps that group drives are unusually successful. The textile industry is perhaps a good example of this. However, in some other industries, notably the steel and machine-tool, the tendency is most certainly toward the individual-type drive. Generally, the author thinks that at the present time individual drives seem to predominate—i.e., as far as newly installed equipment is concerned. However, it does not seem as if in most cases the actual friction losses which would be eliminated through the use of individual drive in themselves would carry enough weight positively to swing the decision toward either one or the other of the two types of drive.

In many of the states the safety laws are decidedly against the installation of large groups in which lineshafts and jacks are carried overhead. The vertically running belts are a continual hazard not only to safety in operation, but also in the cutting off of light and ventilation in the room; and in order to have the very best output from an operator, it is necessary that he be working under good operating conditions.

If the plant management is sufficiently interested to have some one appointed to go thoroughly into the problem, the various operators can be trained to operate their respective machines with a view to getting the most out of them with the least power cost. If first cost is of extreme importance, group drive offers a much cheaper solution than the individual drive.

Not always can the management choose the particular building in which it must produce a given article. Frequently the floor space in a building will be quite adequate, but the overhead construction will not admit of lineshafting. In such a case, obviously, the individually motorized unit must come into its own.

Arrangement of Tools

In arranging tools for group drive it is frequently very much more convenient, as far as the product is concerned, to place the tools one way, while a much better tool arrangement, as far as tools are concerned, could be secured another way. In such cases the ideal arrangement, as far as the motor drive is concerned, must be sacrificed in order to meet the proper flow of production, because it is not a feasible thing to have production jump forward and back and around, but rather should it flow in a continuous stream. The material should enter at one point and progress to where the finished product emerges.

In locating groups with overhead lineshafting and vertical belt drive, the machines must be carefully lined up with respect to the lineshafting. It is not convenient usually to place them at an angle, even though the machines might thus much better utilize the space available. This is where the individually motorized tool is at a great advantage. The tool can be placed as best suits the convenience of the production routine, and, it upon trial it does not prove satisfactory, it is a relatively simple matter to move it to a point where this is true, a feature which is not possible in the case of the group drive.

In a paper on "the District Apprenticeship System," Harold S. Falk, of Milwaukee, deplored the fact that the American young men do not ordinarily go into the trades unless they are forced into them by circumstances. To remedy this state of affairs, according to Mr. Falk, the trades must be given a new dignity. "They must be made more attractive. The personal requirements for most trades are as high as for ordinary commercial work. The machinist is as good a man as the bookkeeper and he gets as much pay. It still remains to make him as highly respected in the community as the bookkeeper is. Boys will not go into the trades in sufficient numbers until they, and especially their parents, feel that the trade work is just as desirable as clerical work; until the molder and the patternmaker are just as important men in civic organizations and clubs—and in the eyes of the young ladies too—as the bank clerk and the insurance-office man. Apprenticeship will achieve this result if it is made a district undertaking.

"One or two isolated establishments cannot affect an entire community, no matter how well established their apprentice work may be. Their influence will be negligible. All the manufacturers in a district must unite in one great organization to advertise the trades and apprentice training for the trades throughout the entire city. People in all classes of life must be taught to take apprenticeship for granted. Apprenticeship must be so thoroughly established that every boy, from his earliest days, will think no more of escaping an apprentice course than of escaping attendance at school. The district apprenticeship committee must confer with school authorities, teachers' associations, and parent teachers' associations. They must establish contact with Boy Scout officials and other organizations for boys and young men. They must go into the schools with apprenticeship exhibits and talks; they must arrange for visits by high-school and grade-school classes to shops and factories; they must influence the school boards in order that more and more of civic studies and English composition may be devoted to industrial questions. They must cause articles to be written for the newspapers and other publications regarding industrial and trade work and the necessity of training for them by means of organized shop courses. With the help of every single manufacturer in the district they must work enthusiastically and unceasingly, year after year, in the face of difficulties of every kind, until the mechanics required in the district are raised, educated, and given a thorough apprentice training in the homes, schools and shops of the district."

"The above," Mr. Falk said, "is not a mere theory but has been fully proved out in Milwaukee, where the local branch of the Metal Trades Association has conducted a district apprenticeship system for several years. The branch has an apprenticeship committee and work and pay schedules have been established and are in force. The people of Milwaukee understand that the metal-trades shops offer a real opportunity to young men, and boys of all classes are taking courses in the various shops. High-school and college graduates apply voluntarily for apprentice training even in the foundry, and the teachers and school authorities are so imbued with the apprenticeship idea that the opportunity to undertake an apprentice course is held out to the best students under their instruction rather than considered a method of gracefully dismissing those whose school work is below par.

In concluding his paper Mr. Falk drew attention to the fact that a considerable number of organizations in this country are at present studying apprenticeship systems and problems. This, he thought, was duplication of effort, and he suggested that the various organizations turn their apprenticeship systems over to one central committee on apprenticeship similar to the National Safety Council.

Roller Bearings in Machine Tools

S. M. Weckstein, industrial equipment engineer of the Timken Roller Bearing Co., spoke on recent developments in the application of tapered roller bearings in machine tools. He dealt with the general properties of such bearings and then illustrated and described their application to geared headstocks, live centers of tail stocks, boring mill spindles, milling machine spindles, automatic screw machine spindles and grinding machine spindles. Mr. Weckstein said that the Timken company in its own plant uses a large number of grinding machines and had had excellent opportunity of studying the application of tapered roller bearings on wheel spindles. By changing over the original spindles to the use of tapered roller bearings, it was found possible to crowd the spindles to a greater extent and yet secure excellent results in production and with respect to precision. Longer life than with any other bearing tested was obtained.

At the present time studies and tests are made of the application of tapered roller bearings on vertical and horizontal surface grinders, centerless grinders and other types of high-grade machinery.

Heavy-Duty Cletrac Tractor Powered With 6-Cylinder Engine

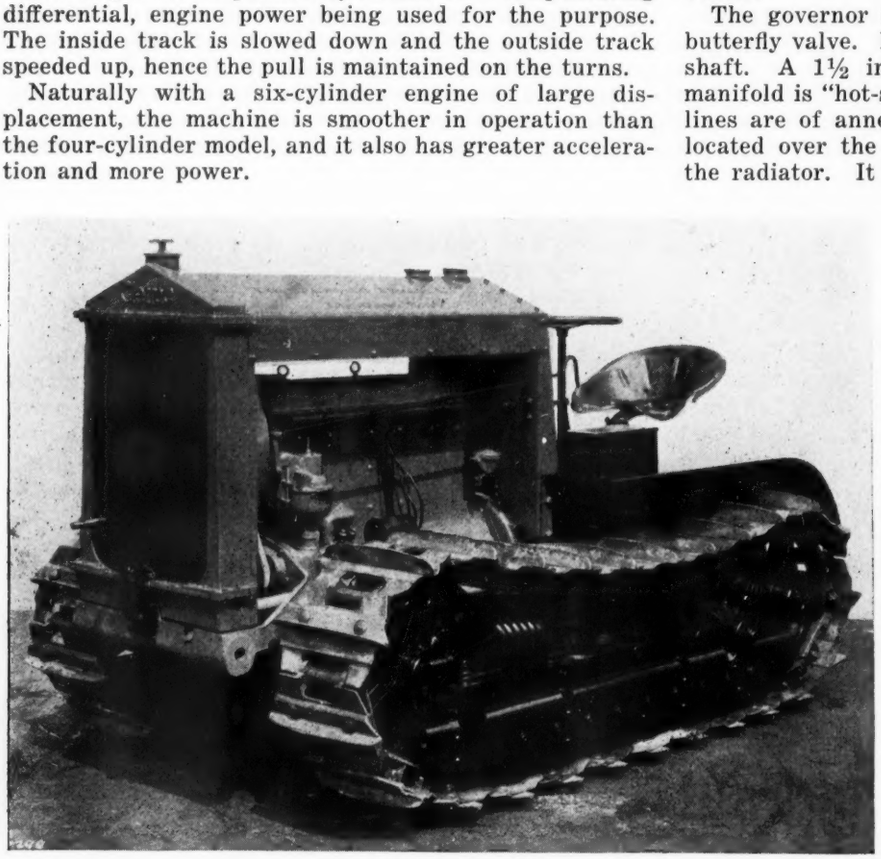
New design has greater drawbar pull than other models in Cleveland Tractor line. Supporting surface of 1800 sq. in. Engine aids in steering and pull is maintained on turns.

WITH the addition to its line of a new model A, 30-45 hp. six cylinder Cletrac, the Cleveland Tractor Co. now claims to be able to furnish a crawler type tractor for every farm and industrial need. Model A is designed for the heavier jobs, having a greater drawbar pull than the earlier models. With a total supporting surface of 1800 sq. in., it is claimed that this tractor will travel over soft and wet ground, ice, snow and mud without slipping.

In the design of this new tractor it has been aimed to make adjustment and replacement of parts in the field possible with the least loss of time and effort. There are only four grease cups on the whole machine, and most of the tractor parts are lubricated by a single stroke of a plunger type lubricator. All driving parts are protected against dust, and the adjustment of the lower track wheels and sprockets at regular intervals is not necessary on this model.

Steering is accomplished by means of a compensating differential, engine power being used for the purpose. The inside track is slowed down and the outside track speeded up, hence the pull is maintained on the turns.

Naturally with a six-cylinder engine of large displacement, the machine is smoother in operation than the four-cylinder model, and it also has greater acceleration and more power.



New Cletrac Model A six-cylinder tractor

The engine is of the valve-in-head type with block-cast cylinders. It has bore of 4 in., a stroke of 5 in. and develops 65 hp. at 1575 r.p.m. The crankshaft is supported in four large bronze-back, babbitt-lined main bearings. The pistons are of cast iron, with two compression rings and one oil regulating ring. Valves are of chrome silicon steel, 1⅞ inches in diameter.

Lubrication is accomplished by force feed to crankshaft and camshaft bearings and to the rocker lever bearings, and by splash to the cylinder walls, pistons, rings and piston pins. The oil pressure relief valves is located at the rear of the main line, outside of the crankcase. The oil pressure is maintained at 5 lb. p. sq. in. while idling and is limited to 30-35 lb. in regular operation.

Ignition is by a high-tension Eisemann magneto with impulse starter, the maximum advance being 35 deg. When fully retarded the engine fires in the upper dead center.

The governor is of the flyball type and acts on the butterfly valve. It is driven from the magneto auxiliary shaft. A 1½ in. carburetor is fitted and the intake manifold is "hot-spotted" above the carburetor. All fuel lines are of annealed copper tubing. The fuel tank is located over the engine and extends from the dash to the radiator. It has a capacity of 22 gal. in the main tank and of ¾ gal. in an auxiliary tank. Air entering the carburetor is cleaned by the Pomona oil-type clarifier, which is mounted on the fuel tank dash.

The radiator is of the tubular type and has a capacity of 6¾ gal. The fan is four-bladed and driven from a pulley on the magneto auxiliary shaft by a composition V-type belt. A belt tightener is provided and is integral with the fan.

The clutch is of the single plate pull type, 12 inches in diameter. The transmission is selective, with two speeds forward and reverse. All gears and shafts are of alloy steel and heat treated. Heavy duty ball bearings are used throughout. Lubrication of the transmission is cared for by the lower train of gears running in an oil bath.

The lower track wheel assemblies are of plain bearing design, having cast iron bearing boxes with hardened steel shafts. A snap, force feed system of the Cleveland Tractor

Company's own design furnishes lubrication. One depression of the plunger will lubricate all lower track wheel bearings.

Drive sprockets of cast steel, with manganese steel rims, are supported on large shafts mounted in heavy duty ball bearings. Track shoes are 13 in. wide, with 8 9/16 in. pitch. Grousers are 2⅛ in. high and 16 in. wide. There are twenty-five manganese steel shoes in each track, joined by 15/16-in. alloy steel pins. Rollers are of No. 1020 S.A.E. steel, case hardened. Bushings are alloy steel. The length on the ground of each track is 70 in. and the unit ground pressure is 3.5 lbs. per sq. in.

The two forward speeds are 2.4 and 4.8 m.p.h., respectively, while the reverse speed is 1.9 m.p.h. The over-all dimensions are 109 in. (length) by 57 in. (width) by 62¾ in. (height) and the ground clearance is 5¾ in. The distance between track centers, corresponding to the tread, is 44 in.

On the drawbar the engine develops 30 h.p. and on the pulley, 45 hp. At 2.4 m.p.h. the drawbar pull amounts to 5700 lb. and at 4.8 m.p.h., to 3500 lb. A power take-off can be furnished with or without belt pulley. The pulley used is 15 in. in diameter by 8½ in. face, and runs at 690 r.p.m., giving a belt speed of 2700 ft. p. m.

While a number of Model A. tractors have been delivered and are reported to be giving excellent satisfaction, executives are not prepared to say when quantity production of this model will be begun. At the present time the company is enjoying a particularly active demand for its Model K Cletrac for road work.

Protecting Aluminum Against Corrosion

SOME tests to determine the effectiveness of a method of protecting aluminum and its alloys against corrosion by anodic oxidation were reported in a paper prepared for the British Association meeting at Oxford by Dr. G. D. Bengough and H. Sutton.

It was pointed out that the resistance of aluminum to corrosion is due to a protective film of aluminum oxide or hydroxide. It would seem therefore that the resistance of aluminum against corrosion might be greatly increased if a thick and strongly adherent film of oxide or hydroxide were formed on the metal instead of the natural thin film. Mott had shown that such a film could be formed by making the metal the anode in a bath of sodium-hydrogen phosphate, and recommended such treatment as a protection against corrosion. The authors found that the film produced by anodic oxidation in a bath containing a chromate, bichromate, or, best of all, chromic acid, protected the metal much more effectively.

The process of anodic oxidation was essentially as follows: After thoroughly cleaning the surface of the aluminum, it was immersed in a suitable bath, e.g., dilute chromic acid, along with a carbon rod, and a small external E.M.F. was applied so as to make the aluminum the anode and the carbon the cathode. The applied E.M.F. was gradually raised to a value depending on the nature of the alloy and on the composition of the bath. Thus, with duralumin in a chromic acid bath, the pressure might be safely raised to 50 volts. After treating it for some time in this manner, the surface of the metal became covered with a semi-opaque, uniform, grey coating.

In carrying out the treatment, two practical points should be noted. The immersed material must consist only of aluminum or suitable aluminum alloys, since other commercial metals were usually attacked by the treatment; also, the bath should be large compared to the material, otherwise the heat produced by the current would make it difficult to regulate the temperature of the bath. However, in cases in which a sufficiently large bath was impracticable, cooling coils might be used to remove the excess of heat.

The coating seemed to consist almost entirely of aluminum oxide in a glassy, adherent form. The film would form in the recesses of any pores or cracks in the metal, provided the liquid could penetrate into such pores and cracks. That was a property of great importance as a protection against corrosion.

A preliminary study of the anodic oxidation process was carried out by treating a large number of specimens under different conditions. The number of variable factors was obviously large, e.g., the nature of the alloy, the composition of the bath, the time of treatment, and the maximum voltage applied. For simplicity, sheet duralumin was mainly used for the tests, and attention was concentrated on determining the type of bath which gave the best coating. Pitting was due to breakdown of the protective coating under electrical pressure, and the voltage at which it occurred was known as the "breakdown voltage." It was dependent mainly on (1) the nature of the metal treated, and (2) the nature of the bath.

When pitting began under the anodic treatment through breakdown of the glassy coating at one or more points, the current rapidly increased, and the metal was heavily attacked at such points. The oxide produced under those conditions over the pitted area was apparently a non-protective porous variety, instead of the original glassy form. The experiments indicated that the best coatings could be obtained in a bath consisting only of a solution of chromic acid, and that pitting could be avoided by suitable voltage regulation. The chromic acid used contained 0.95 per cent of sulphuric acid, that being the purest material available in sufficient quantity to make up the solution.

The anodic process provided a protective coating at pores and cracks, but water-line conditions broke down even the anodic film. Clearly, some form of waterproofing was desirable in order to prevent gradual penetration of the film as a result of wetting and drying. The simplest method of waterproofing was to apply a grease, such as lanoline. That might be effected by dipping the article in molten lanoline or in a solution of lanoline in a suitable solvent, e. g., a 15 per cent solution in benzine, or into a lanoline emulsion. The lanoline was absorbed by the film and held very tightly. The resistance to corrosion of anodically-treated aluminum and aluminum alloys was much increased by the lanoline.—The Engineer.

MUCH attention is being given to instruction in aeronautic science in German technical colleges. The most largely attended course is that of the Charlottenburg Technical College, but similar courses are offered at Aix-la-Chapelle, Darmstadt and Hanover, where students have done considerable experimental work with gliding planes. There is also a chair for technical aeronautics at the University of Danzig. Among the institutions of trade school grade, those at Frankenhausen, Cothen, Oldenburg and Strelitz teach aeronautics.

Side view of the completely assembled trans-Atlantic plane. Gasoline for the wing engines is carried in the tanks back of these engines while fuel for the nose engine is carried in tanks in the upper plane

Sikorsky Trans-Atlantic Airplane a Redesigned *"Freighter"*

Giant ship originally designed for high-speed transport but plans were later modified to adapt it for Captain Fonck's non-stop New York to Paris flight.

By Athel F. Denham

ALTHOUGH the general impression seems to be that the Sikorsky S-35 airplane was designed specifically for Capt. Rene Fonck's attempt to cross the Atlantic, this airplane, Igor Sikorsky's 35th ship, really was conceived primarily for passenger or freight transportation at higher speeds than is available in present-day transport planes. In fact, a considerable number of modifications had to be made in the original design to equip the ship for the trans-Atlantic flight.

The basic principles underlying the design were the obtaining of a multi-engined commercial transport capable of high speeds, even with one motor out of commission, besides embodying in the design all features which have been proved in actual service to increase the safety and reliability of airplanes. Ability to climb and maintain a high altitude with any motor stopped, inherent natural ability, quick getaway, good visibility, high safety factors under all flying conditions, elimination of fire-hazards, good gliding angle, and the absence of any doubtful methods of construction were thus necessary pre-requisites in the design.

As a result, the S-35 was designed to have a maximum speed of 160 m.p.h. with a maximum speed on two engines of 135 m.p.h., and a cruising speed on three engines and two engines respectively of 140 and 115 m.p.h. The wing span in the original design was 76 ft., giving a total wing area of 840 sq. ft. and a wing loading of 16.1 lb. per sq. ft. As the original design called for an endurance of only 5 hours, corresponding to approximately 700 miles at a cruising speed of 140 m.p.h., and as the contemplated non-stop trans-Atlantic flight called for sufficient fuel and oil to carry the ship a distance of over 3660 miles, it was necessary to increase the tankage of the ship, the increased load making necessary an increased wing-spread. Thus, the final ship has a spread of 101 ft. with a wing loading of 21.85 lb. per sq. ft., the total area being 1095 sq. ft. and the weight of the ship fully loaded 24,200 lb.

Mr. Sikorsky has for some time been one of the leading proponents of multi-engined ships, and thus has provided for three 400 hp. engines in the S-35. To keep the total weight down to a minimum, air-cooled engines were chosen for this plane, and as a total of 1200 hp. was required, and due to the then lack of availability of air-cooled radials of 400 hp. in the United States, the S-35 was equipped with Gnome-Rhone built Bristol Jupiter type engines. Four fuel tanks, mounted in the upper wing, represented the original fuel tank installation. For the trans-Atlantic flight the design has been changed so as to have these tanks supply fuel to the nose engine only, separate stream-lined tanks for the wing engines having been installed in the wing engine nacelles. While the photographs, due to the installation of these tanks and the subsequent necessary change in the mounting of the wing engines to maintain the center of gravity in the same plane, show the wing engines as considerably forward of the wings, the original design was such that for ordinary use these engines are mounted so that they are readily accessible from the lower wing in flight, doors having been provided in the cabin leading to the lower wings for this purpose.

Structurally the S-35 is of the all-metal type, while fabric covering is used at all points except for the cowling of the engines. Wing spars are of built-up type

duralumin I-beam construction, while the ribs are made of dural channel sections. The entire frame-work, including wings, fuselage, empennage, and undercarriage, is assembled with duralumin rivets and nickel steel bolts, while the internal drift bracing is taken care of by high tensile strength steel tie rods. No welding is used in any part of the ship. The wings themselves taper to a knife edge at the outer ends and are braced externally in two bays with streamlined struts and cross wires. Ailerons, which taper off towards the outer end, are hinged on auxiliary beams back of the main wing beams and are so constructed that with the aileron in the normal position a perfectly smooth airfoil section of the wing and aileron is obtained.

Interesting Facts About Fonck's Trans-Atlantic Flight

Total distance to be covered, non-stop...3660 miles
Cruising speed of plane on three engines.140 m.p.h.
Time required at cruising speed..Approx. 26½ hrs.
Present world's record non-stop flight...1987 miles
Useful load being carried by the S-35.Nearly 8 tons
Fuel carried sufficient at cruising speed for..31 hrs. or 4300 miles

The S-35 was designed by a Russian, built in America, is equipped with French-built engines of English design and is being flown by a Frenchman, assisted by an American.

Riveted and bolted duralumin angles and steel tubes make up the fuselage. The design of that part of the fuselage containing the cabin has been carried out so as to eliminate all cross wires in the cabin. In the trans-Atlantic plane air bags are provided both below the floor of the cabin and in the rear part of the fuselage to keep the plane afloat in case of a forced landing. Evidence of the unusual confidence which the designers have in this plane is emphasized by the fact that the undercarriage is of the land type. No attempt has been made to provide for landing on water except by the installation of the aforementioned air bags in the fuselage and the provision of folding life-boats in the cabin. The tread of the undercarriage is unusually wide, measuring 18 ft. 4 in. between wheels.

Following modern practice, a divided-axle type of landing gear is used, independent shock absorbing units of 24 rubber rings each being mounted at each wheel. Stresses in landing are transmitted in a vertical plane to the lower ring and thence by means of the inter-plane struts immediately above the wheel to the upper wing, while the tail skid is equipped with a double shock absorbing mechanism, which does not interfere with the tail skid being able to turn in two directions.

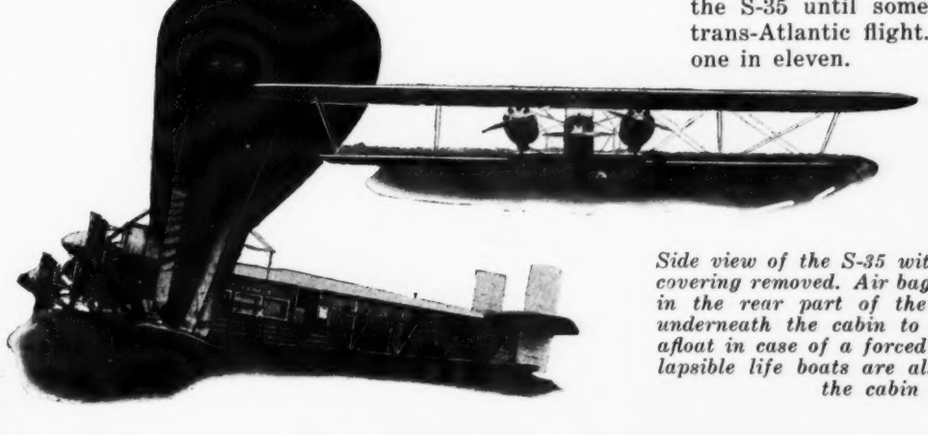
Similar in construction to the wings, the tail planes are also of fabric covered dural, while the stabilizer is adjustable from the pilot's cockpit in flight in case of one engine being shut down or shifting of the load due to moving about of passengers in the cabin. As a further means of providing ease of control in flight, the rudders are of the balanced type, being also provided with a compensating mechanism of a design patented recently by Mr. Sikorsky.

Good visibility for the pilot is obtained by locating the cockpit, with accommodation for two pilots (dual controls being provided), forward of the main cabin, communication with the cabin being provided by the usual door at the front end. Electric ceiling lights, ventilators and heaters are provided in the cabin while lavatory and wash room facilities are located in the rear of the cabin, according to the original designs.

Accidental tail spins and nose dives are avoided in the S-35 as in previous Sikorsky planes built in this country by the design of the wing and the embodying of natural stability in the plane with perfect control at all speeds, even in a stall. It is interesting to note that in the design of the S-35 the various load factors of the plane for high and low incidences and inverted flight were computed, the figures being six, four and three respectively, which should be ample to enable this plane to come through all kinds of weather conditions. The unit stresses were taken as 45,000 lb. per sq. ft. in the analysis, which is a conservative figure for heat treated duralumin of the type used in the S-35.

The weight analysis of the plane as equipped for the New York-Paris flight is extremely interesting. While the weight of the machine fully loaded is 24,200 lb., only 8000 lb. of this represents the weight of the plane. Fuel and oil make up the major part of the difference, 15,200 lb., while special equipment including radio receiving and transmitting apparatus is about 490 lb., leaving 510 lb. to represent the weight of the crew and their paraphernalia.

At full throttle with all three engines running the plane has a climb of 1100 ft. per minute, while on two engines the climb is 400 ft. per minute. These figures however are based on the original design calling for a gross weight of only 13,800 lb. and it is extremely doubtful whether any such performance could be achieved in the S-35 until some time after the beginning of this trans-Atlantic flight. The gliding angle is good, being one in eleven.



Front view of the Sikorsky S-35 as equipped for the trans-Atlantic flight. Note the unusually large wing-spread, over 100 feet, and the wide tread of the undercarriage

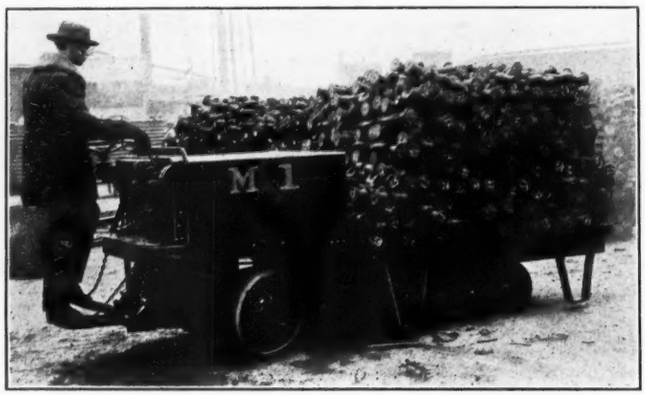
Side view of the S-35 with cowling and covering removed. Air bags will be fitted in the rear part of the fuselage and underneath the cabin to keep the ship afloat in case of a forced landing. Collapsible life boats are also provided in the cabin

NEW DEVELOPMENTS—Automotive

Elwell-Parker Lift Truck

A STORAGE battery operated lift truck which picks up from the ground, transports to destination and sets down loads up to ten tons is the latest addition to the line of electric industrial trucks made by The Elwell-Parker Electric Co., Cleveland. This new truck, called the Super-Lift Tructor, weighs, complete with batteries, about 6100 lb., and is driven by storage batteries through drum type controllers.

The lift mechanism is located under the batteries and consists of a motor direct connected to a single worm reduction with a nut built into the hub of the worm wheel. A forged multi-thread worm ram travels in and out of this nut to lift or lower the load. The trail axle carries four wheels, each of which is fitted with two



Elwell-Parker ten-ton elevating truck

differentiating tires to provide proper creep when being steered. All four wheels steer simultaneously and concentrically with the two large drive wheels located beneath the battery.

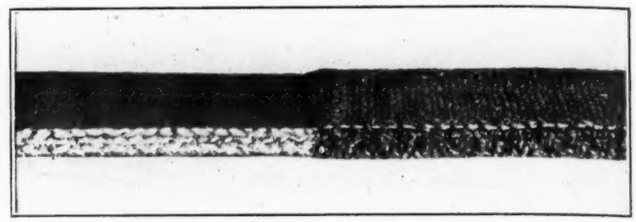
The steering levers at the trail axle are of vanadium steel. All swivels are of the ball and socket type. Steering is accomplished by means of a hand wheel with reduction through mitre and worm gears, all supported on radial or thrust ball bearings. The reduction mechanism operates in an oil bath.

The lift motor is fitted with an electro-mechanical brake. The lift controller is equipped with automatic upper and lower limit stops. The main travel controller is so connected with the brakes that when the operator steps off the platform the power is shut off and the brakes applied.

Speed of the truck is from 300 to 400 ft. per min. The entire powerplant is removable as a unit. Drive wheels are disk type mounted on 7-in. double row ball, radial and thrust bearings and equipped with 22 by 6 in. solid rubber tires.

Heavy Duty Brake Lining

THE Raybestos Co., Bridgeport, Conn., has placed on the market Gold Edge heavy duty brake lining which has been designed to meet the very severe requirements of bus, truck and taxi service. The new lining is an asbestos product, woven oversize, treated and compressed to two-thirds of its original size under a pressure of 30,000 lb. per sq. in. This is said to give it great density, smooth surface and long wearing qualities.

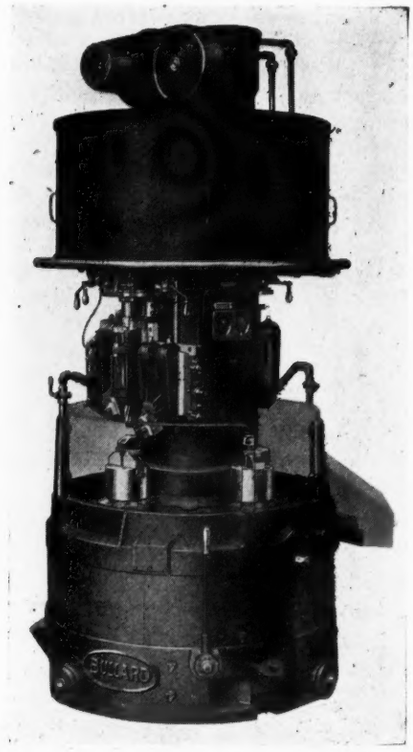


Edge view of new Raybestos brake lining showing size of material before and after compression

Being heavily compressed, Gold Edge lining is claimed to require little or no breaking in and its hard smooth surface makes it less liable to pick up gravel and grit or particles of steel from the drums. These factors tend to decrease drum scoring.

New Size Mult-Au-Matic

The Bullard Machine Tool Co., of Bridgeport, Conn., has brought out a new size of its automatic multiple spindle production tool, the Mult-Au-Matic. This tool differs from the previous model both in size and the number of spindles and is known as the Six-Inch, Four-Spindle Mult-Au-Matic. In general outline it is similar to the other model, but stands only 104 in. high overall, and is contained within a floor space of 48 in. diameter.



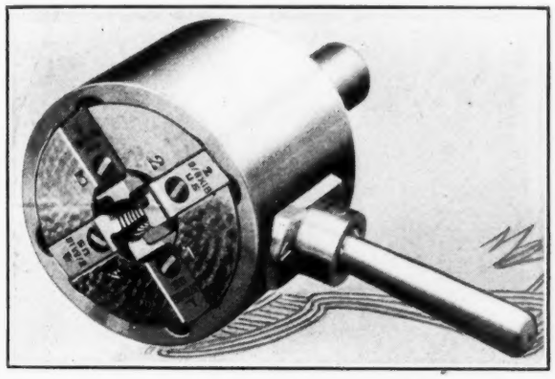
Bullard Six-Inch Four-Spindle Mult-Au-Matic

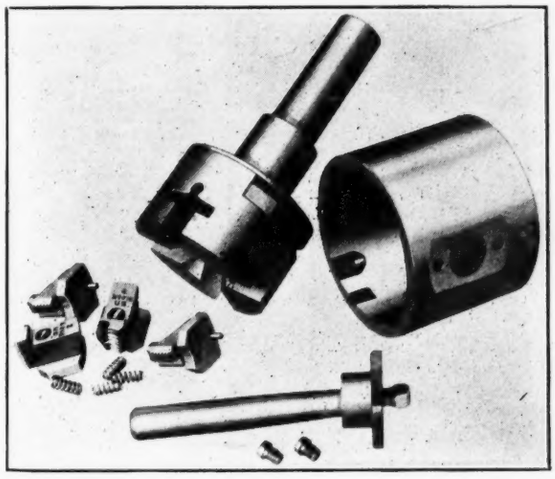
Parts, Accessories and Production Tools

Style S Namco Die

THE National Acme Co., Cleveland, O., has recently revised its line of self opening die heads and now offers but two types of tools which are said to handle every threading need within their capacity. This has been done by adding to their standard Style R revolving die, Style S stationary die which replaces all the types of stationary and hand dies formerly made by the company.

The Style S die can be used for straightaway threading, close to the shoulder threading or for short threads.





Assembly and assembly details of Style S Namco die

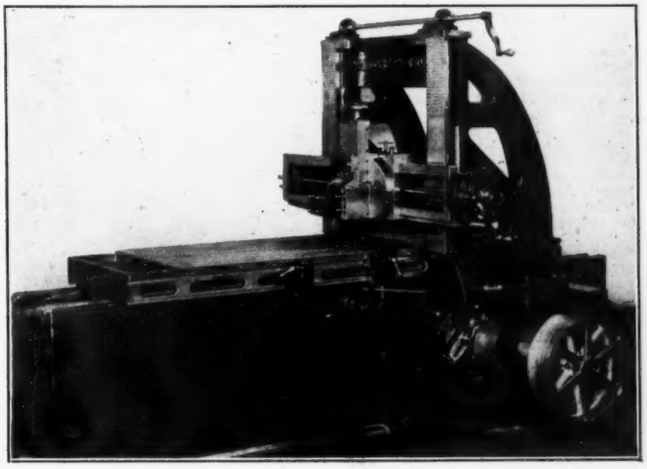
It is applicable to all types of hand screw machines, turret lathes and similar tools requiring stationary dies.

As shown in the accompanying illustrations, by the removal of two screws the die can be taken apart for cleaning and can then be reassembled without affecting the size adjustment. The shank rides on coiled springs so placed that when the thread has been cut to the desired length and the chasers automatically thrown open these springs pull the chasers away from the work. Chasers are interchangeable between the stationary and revolving dies made by the company.

Adjustments can be made on the Style S die with a screw driver while the die is in its holder. The adjusting screws are located in the periphery of the cup and the adjusting ring is graduated. Seven sizes are offered —identical with those offered in the revolving type die. Cutting range is from ⅛ to 2½ in.

Whitcomb Planer Improved

REED-PRENTICE CO., Worcester, Mass., have announced some changes in its 24 in. Whitcomb planer. The table and bed of the machine are now of box type,

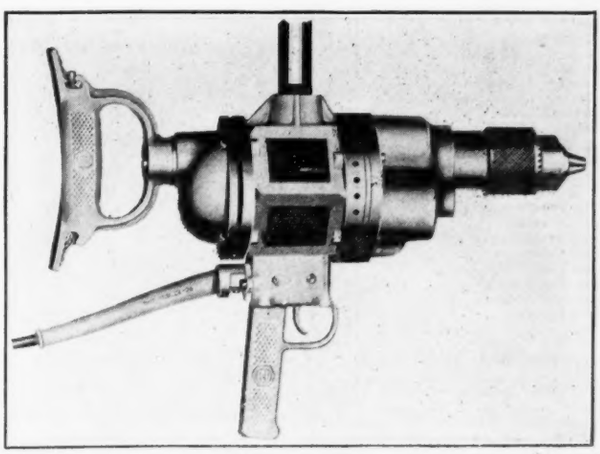


Whitcomb 24 in. planer

the latter being cored out as shown in the accompanying illustration in order to reduce the reciprocating weight. All bearings in the driving system are lubricated under pressure while there is a gravity oiling system for all other parts with a central oil station in order to maintain an even level of oil in all pockets.

Ball Bearing Electric Drill

THE ⅝ in. Special Ball Bearing Electric Drill, a recent development of Black & Decker Manufacturing Co., is designed to use either carbon steel or high speed steel bits for drilling holes up to ⅝ in. in steel or holes as large as 2 in. in wood. This drill is particularly recommended for spring expanded cylinder hones.



Black & Decker ball bearing portable electric drill

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	GASOLINE PASSENGER CARS										TRUCKS					
	Up to $500		$500 to $800		$800 to $1200		$1200 to $2000		Over $2000		Up to 1 ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria	16	$8,290					2	$3,780								
Azores and Madeira Islands	6	2,134	4	$2,839							3	$1,967				
Belgium	219	88,858	247	145,419	100	$101,183	18	28,497	17	$45,101						
Bulgaria																
Czecho Slovakia			8	5,343	11	11,304	1	1,674								
Denmark	633	271,302	201	137,307	49	50,825	2	2,893	1	2,194	193	85,066	2	$2,529		
Esthonia																
Finland	4	2,090	29	21,616	23	24,305	2	2,990	3	7,200						
France					3	3,239	4	5,983	9	27,443	16	8,184	1	2,700		
Germany	3	1,154	41	29,831	95	106,988	45	69,499	10	28,478	6	4,364	4	3,784	2	$3,237
Greece			1	625												
Hungary	4	1,838	3	2,119	1	1,235										
Iceland and Faroe Islands																
Italy	40	12,795							17	52,305						
Latvia			3	2,325	1	933	1	1,880					1	1,255		
Lithuania			4	2,465			1	2,000								
Malta, Gozo and Cyprus Islands	2	978	7	4,718	1	1,141										
Netherlands			47	32,552	22	24,166	11	17,223	8	21,093	2	1,085	5	5,015		
Norway	10	4,548	4	3,096	25	26,359	5	7,959	2	6,000			12	12,033		
Poland and Danzig																
Portugal	24	12,133	6	3,881	19	18,891			2	5,315	6	3,191				
Rumania			6	4,740	6	6,250	4	6,397	2	5,229						
Russia			2	1,465									1	1,516	3	17,415
Spain	54	17,182	64	48,440	132	146,503	54	90,152	21	80,069	110	43,514	15	16,135	1	1,941
Sweden	25	11,173	165	125,395	148	153,313	19	29,548	2	4,448	23	17,819				
Switzerland			4	3,097	9	8,539	30	50,748	13	32,175			4	3,966		
Turkey	18	8,430	1	828	7	6,954	1	1,768			2	1,067				
United Kingdom	11	5,523	120	72,078	92	87,061	23	43,597	5	13,532	289	96,017	6	9,830		
Irish Free State	5	1,450	9	6,534	8	8,041	1	1,985			4	2,667				
Yugoslavia			1	844	17	18,535	3	4,244								
United States																
British Honduras	4	1,198									1	1,120				
Canada	619	239,283	1,230	738,330	447	434,932	135	206,279	84	221,595	75	45,167	207	291,711	25	99,965
Costa Rica			4	2,897	6	6,767	3	3,985			2	1,584				
Guatemala	1	500	1	600	14	14,790	4	7,074	2	7,290	5	3,481	16	26,691		
Honduras	7	2,286	1	600							2	1,391				
Nicaragua			1	788												
Panama	13	6,089	14	10,202	3	2,992	2	2,769	1	2,160	9	6,431	6	5,592	1	2,527
Salvador	1	385	4	3,149	3	3,954	10	15,251	2	5,770	10	3,690	4	5,990	6	17,145
Mexico	401	131,476	203	134,275	114	103,717	36	54,783	14	37,322	145	84,610	14	17,323	3	23,758
Miquelon											1	295				
Newfoundland	8	3,247	6	4,308	5	4,910	1	1,976	4	9,915	2	2,225	1	1,395		
Barbados			2	1,521	2	1,966										
Jamaica	20	7,723	12	7,953	9	8,621					12	4,312				
Trinidad and Tobago	2	986	2	1,360	3	3,109	2	3,059			5	3,480	1	883		
Other British West Indies	6	2,348	7	4,755	1	937	1	1,818			4	803				
Cuba	256	93,562	68	44,725	29	28,167	9	13,135	13	33,573	90	44,465	28	38,638	6	24,922
Dominican Republic	18	6,431			4	4,305	2	2,906			2	1,821	20	29,291		
Dutch West Indies	2	708	6	4,592	6	6,394	3	4,894	1	2,500	10	4,039				
French West Indies																
Haiti	2	676			5	5,302	1	1,410			7	2,268	3	3,671	1	1,941
Virgin Islands	1	406														
Argentina	948	390,243	207	147,203	79	84,278	14	20,438	10	27,447	155	72,007	10	15,646	22	59,655
Bolivia			1	828	6	7,067	1	1,621	4	10,563	3	3,607	8	8,329		
Brazil	886	347,777	263	202,768	158	161,244	33	53,022	41	106,830	1,264	550,171	49	53,718	7	17,696
Chile	13	5,380	26	16,996	16	16,264	3	4,375	4	11,398	11	6,209	22	37,838	2	7,490
Colombia	24	10,442	39	27,477	24	23,134	12	18,017	13	36,798	74	37,749	71	72,891	12	41,651
Ecuador	6	2,124			4	4,257	2	2,830					1	1,397		
British Guiana					2	2,163										
French Guiana																
Dutch Guiana																
Paraguay			10	6,968	3	3,042					2	1,454	2	1,999		
Peru	42	14,776	19	13,754	8	8,066	3	5,178	1	3,000	59	20,373	34	37,069	1	2,613
Uruguay	10	4,775	37	25,225	38	39,169	8	12,109	3	9,364	40	9,570	14	17,995	4	11,862
Venezuela	7	2,482	18	12,666	45	47,463	8	12,828	3	7,658	32	12,711	38	76,600	9	40,860
Aden			152	114,064												
British India	6	2,540			73	77,855	10	16,542	1	3,670	147	115,509	14	15,528	2	3,224
Ceylon	10	4,488	18	13,954	27	29,135	4	6,031	1	2,566	18	15,253	15	20,976	1	1,248
Straits Settlements	11	4,990	4	3,272	16	17,011	3	4,330	2	5,000	3	2,841	6	9,501		
China	86	30,701	31	21,204	39	39,494	1	1,565	1	2,500	108	40,319	8	10,229		
Java and Madura	28	14,738	86	66,901	25	26,035	11	19,813	2	6,438	13	9,281	10	14,348		
Other Dutch East Indies	2	1,110	16	10,173	3	3,623	1	1,470					3	7,769		
French Indo China																
Hejaz, Arabia and Iraq	26	10,092			4	4,212					3	1,660				
Hongkong	22	7,664	2	1,645							37	12,882				
Japan	17	4,515	32	25,899	37	35,971	6	10,500	1	2,310	6	6,785	7	8,437		
Kwangtung	31	9,380	9	5,992	5	5,710	1	1,433			30	9,120	3	4,717		
Palestine and Syria	151	56,650	9	6,051	15	14,389	2	3,489			12	9,960	1	1,080		
Persia	90	28,596	15	11,151							18	14,457	1	1,393		
Philippine Islands	338	140,562	136	93,570	39	44,063	11	19,068	2	6,010	66	20,040	8	9,538	3	7,172
Russia																
Siam	5	2,250	6	4,736	4	4,144										
Turkey	16	7,971			2	1,934										
Australia	1,507	610,829	526	380,291	643	721,347	81	122,949	54	153,457	856	464,336	116	162,682	50	127,299
New Zealand	322	142,175	158	111,201	100	113,678	34	54,336	2	4,650	13	10,745	24	29,413	2	4,709
British Oceania					3	3,570										
French Oceania																
Other Oceania																
Belgian Congo	2	888	2	1,532							81	33,242				
British West Africa	6	2,775	2	1,543	7	7,780	6	9,185			80	83,652	48	52,950		
British South Africa	745	261,442	428	305,402	333	350,716	32	47,504	2	4,539	98	58,765	23	30,401	4	11,516
British East Africa	66	31,088	21	15,433	31	34,690					7	4,735	10	10,838		
Canary Islands	4	2,220	7	5,274	9	9,454	2	2,820					1	1,580		
Egypt	11	5,115	7	5,413	13	13,624	1	1,568			34	12,361	2	3,538		
Algeria and Tunis																
Other French Africa	9	3,239	1	598							7	3,965				
Liberia											3	1,406				
Madagascar																
Morocco	2	912									24	7,752				
Portuguese East Africa	2	950	7	4,409	12	13,929										
Other Portuguese Africa	1	525	1	828	1	1,073					1	350	1	1,417		
Spanish Africa			6	3,972												
Total	7,887	$3,113,586	4,840	$3,286,005	3,244	$3,406,212	726	$1,145,177	380	$1,054,905	4,341	$2,129,390	901	$1,199,765	167	$529,846

for July, 1926 | Canadian Exports

ELECTRIC VEHICLES		PARTS	TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
			Casings		Inners		Solids		Up to $500		$500 to $1,000		Over $1000					
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
		$8,131	165	$2,632	86	$239												Austria
		153,814	64	1,274	56	160												Azores and Madeira Islands
		173	974	27,538	683	2,264	22	$660	2	$980	19	$11,111					$446	Belgium
			18	330	24	75			2	841								Bulgaria
		6,247	1,006	27,237	755	3,752	73	4,780										Czecho Slovakia
		176,288	3,140	50,574	2,230	4,808	10	234			2	1,536					2,407	Denmark
		169			50	129												Esthonia
		6,617	334	7,987	586	1,650	14	664									227	Finland
		210,176	752	19,315	1,105	3,996												France
		190,348	8,254	167,194	5,182	15,513	4	107									4,624	Germany
		4,030	285	4,718	25	81	12	244										Greece
		5,165	45	376	150	857												Hungary
		5,346	49	1,879														Iceland and Faroe Islands
		122,013	161	2,844	262	747												Italy
		86	44	1,134	22	100												Latvia
		32																Lithuania
		3,351	4	79					9	3,819								Malta, Gozo and Cyprus Isl.
		57,497	1,532	36,638	1,361	3,877												Netherlands
		10,354	1,199	28,530	1,197	3,241	18	910	4	1,960	5	3,812					71	Norway
		1,421	132	1,760														Poland and Danzig
		12,770	858	12,682	859	2,099												Portugal
		4,237	416	8,009	189	791	12	989	20	9,443	11	7,248						Rumania
		115	8	180	16	67												Russia
		621,906	2,209	36,343	2,584	12,644	102	6,063									135	Spain
		61,670	3,664	64,718	3,642	7,828	5	250	19	9,000	6	3,480					7	Sweden
		6,211	989	31,215	1,096	3,992												Switzerland
		2,409	162	2,540														Turkey
		387,355	14,607	271,471	7,015	17,574	1,176	35,267	18	7,200	133	97,601	20	$22,881			9,003	United Kingdom
		63,771															5,096	Irish Free State
		2,122	45	945	40	158			14	6,193					2	878	58	Yugoslavia
									16	2,900	1	700			2	6,328	17,634	United States
		2,091	28	327	10	21												British Honduras
5	$10,787	2,679,639	1,121	18,592	1,561	3,970	80	5,274										Canada
		4,983	277	6,031	255	749	12	503	3	1,120					12	5,265		Costa Rica
		9,922	394	8,637	476	1,998	130	1,314										Guatemala
		2,911	176	3,610	225	738	12	926										Honduras
		3,190	17	453	17	71	6	316										Nicaragua
		23,620	656	14,034	1,033	2,965	121	3,511									20	Panama
3	7,095	10,231	142	3,668	136	374	24	1,900										Salvador
8	2,650	239,109	6,076	84,557	6,370	12,102	126	4,612					4	4,975				Mexico
									3	500								Miquelon
		1,811	305	3,655	339	543			26	8,596					2	630	164	Newfoundland
		1,016	49	1,151	30	65	6	213	7	2,428	1	603						Barbados
		18,004	21	294	17	38	91	2,500	12	4,973	7	4,220			4	1,755	17	Jamaica
		3,260	66	1,694	87	345	1	50	6	2,515	3	2,237			4	1,759		Trinidad and Tobago
		3,634	88	1,264	158	264	2	40			1	579						Other British West Indies
1	1,100	103,518	11,519	148,681	11,581	22,549	828	33,571										Cuba
		18,615	953	13,670	859	2,939	27	1,053							10	4,388		Dominican Republic
		1,732	118	1,891	166	428			3	1,207								Dutch West Indies
		93	115	2,135	66	282			2	805								French West Indies
		4,684	429	10,068	634	1,808			3	1,295	1	575			4	1,755		Haiti
		332	18	179	56	122												Virgin Islands
		334,071	12,326	199,745	11,560	28,948	831	38,904	4	1,960							19,186	Argentina
		5,863	174	4,952	182	767	2	144										Bolivia
		375,170	5,909	72,867	6,716	9,189	209	4,986	19	9,310	5	3,700	1	5,395			18,896	Brazil
		56,625	652	13,476	421	1,255	4	369			1	740			6	2,633		Chile
		45,561	1,441	32,445	1,509	6,001	90	4,933	9	3,730							20	Colombia
		1,915	142	1,931	45	206					1	740						Ecuador
		2,301	22	673	6	54			2	819	3	2,050			2	507	174	British Guiana
		22																French Guiana
		187																Dutch Guiana
		330	18	411														Paraguay
		36,994	536	15,436	500	2,134	84	4,327							6	2,877		Peru
		54,542	3,869	52,422	1,421	3,164	83	3,765			7	5,048						Uruguay
		59,961	1,588	40,642	1,357	5,129	36	1,464	24	10,210	3	2,370			50	21,940	31	Venezuela
		1,418	36	594													443	Aden
		109,162	2,714	35,500	1,109	2,740	251	7,051	422	156,270	22	15,280			162	61,804	51,864	British India
		16,908	1,513	31,629	1,307	3,505	80	3,828									5,865	Ceylon
		31,412	1,062	19,150	31	75	14	429	206	78,906					88	28,723	31,161	Straits Settlements
		17,658	1,022	16,567	419	1,012	77	3,118	14	5,953	3	1,770						China
		32,767	943	22,264	1,230	3,198	126	4,788	166	61,354	8	5,856			141	45,237	14,656	Java and Madura
		9,177	107	1,684	55	187												Other Dutch East Indies
		1,733																French Indo China
		3,504	1,993	31,405	785	2,005	22	851	15	6,525					4	1,755	40	Hejaz, Arabia and Iraq
		7,121																Hongkong
2	2,386	392,421	2,439	34,555	1,826	4,181			24	10,470					20	8,725	10,357	Japan
		201																Kwangtung
		11,826	309	6,409	194	705											26	Palestine and Syria
		1,743	510	10,004	1,012	2,976	30	1,064	2	805	2	1,480						Persia
		69,427	9,615	120,597	9,152	34,576	338	12,031										Philippine Islands
		115																Russia
		3,167							6	1,876					34	12,470	9,488	Siam
		961	100	1,213	270	616												Turkey
		278,518	1,267	29,044	1,291	3,417	278	17,022	820	206,700					443	125,719	109,050	Australia
		94,275	883	13,999	678	1,580	172	9,559	167	62,448	151	77,079			150	56,246	15,183	New Zealand
		310	4	46	4	12			1	330					1	315	317	British Oceania
		1,193	1	26														French Oceania
															14	4,200	1,732	Other Oceania
		5,853	112	3,054	250	930												Belgian Congo
		14,734	138	5,415	48	220			45	14,742					52	15,155	6,385	British West Africa
		135,580	1,609	22,781	746	1,457	84	3,840	12	5,588					212	68,624	21,236	British South Africa
		17,981	239	4,248	158	382			16	6,032							302	British East Africa
		9,220	779	9,558	312	1,002	118	5,287	6	2,810	4	2,780			7	2,669		Canary Islands
		7,253	483	8,119	342	1,019	314	9,575	37	16,095	6	3,496			56	24,572		Egypt
		1,894																Algeria and Tunis
		10,630	62	1,741	62	360												Other French Africa
		67																Liberia
									6	2,100					7	1,865	310	Madagascar
		6,037																Morocco
		424	116	1,678	48	156			17	7,396	1	740			20	9,649	60	Portuguese East Africa
		2,416	6	35														Other Portuguese Africa
		94													2	878		Spanish Africa
19	$24,018	$7,526,961	118,423	$2,001,048	98,337	$262,171	6,157	$243,278	2,209	$738,204	407	$256,831	25	$33,251	1,517	$519,321	$356,695	Total

New Ruggles Bus Equipped With Special Facilities for Long Runs

Body designed with overhead baggage racks, Pullman type seats and lavatory. Standard Model 70 chassis used with 236 in. wheelbase and 105 hp. engine. Wheels disk type.

A NEW 26-passenger motorcoach equipped with toilet facilities and overhead baggage racks for long interurban runs and special tours has been developed by Ruggles Motor Truck Co., Saginaw, Mich.

The chassis is the standard Ruggles Model 70 coach chassis with 236 in. wheelbase, powered with a 105 hp. six cylinder motor with double reduction drive. Pneumatic cord tires are fitted to Budd disk wheels, dual on the rear. Gruss transport type air springs are used on the front.

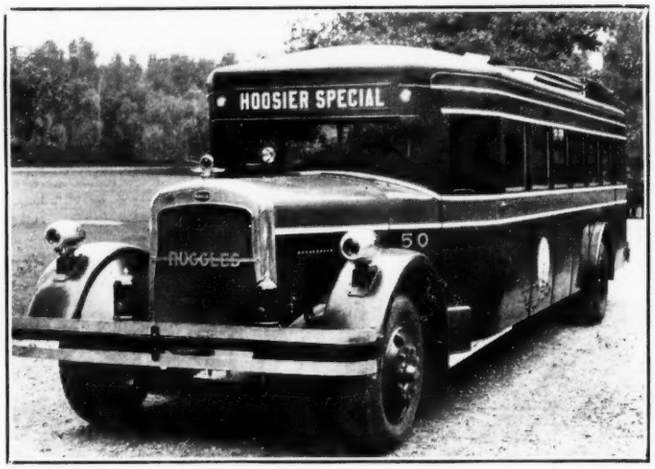
The two main features of the new body are the lavatory and the baggage accommodations. The former is located at the right rear side of the bus, is finished in mahogany and is economical in space. It includes toilet, ice water tanks, large mirror, porcelain wash bowl with running water and provision for soap and towels.

The luggage racks are patterned after railroad practice and greatly resemble those found in the usual railway coach. They are placed high enough to be out of the way of the passengers when seated but still are readily available for baggage movement. By this method each passenger looks after his own baggage, an obvious advantage to the operator, but it does not interfere with free movement inside the bus. Additional facilities are provided on the roof to care for excess luggage.

Pullman type seats are used. They are provided with arms and are covered with striped mohair. The window sashes are of brass and are also of Pullman type. Window shades are roller type furnished with fringe.

The floor is covered with battleship linoleum, while over this Wilton carpet is laid along the aisle. Pillar mirrors are installed between the windows together with combination double coat hooks and ticket holder. The six dome lights are protected by non-glare shields. Side seats are used over the wheel housings and sufficient room is provided for the use of a small card table or lunch table between them.

An electric buzzer system, electric clock, and adjustable driver's seat are other standard features.



Ruggles new touring coach

Interior of Ruggles touring coach showing Pullman type seats, luggage racks and lavatory

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A STUDEBAKER dealer recently encountered a peculiar case of engine trouble, which, although rare, might cause a service man some worry before found, says *Studebaker Service.*

In this case, the engine ran out of gasoline when driving up grade and after driving along level ground for more than a mile at a speed about twenty-five miles per hour. In attempting to remedy the trouble the gasoline lines, vacuum tank, gasoline filter, carburetor and intake manifold all came in for their share of attention.

It was then discovered that by running the engine at a speed equal to about 30 miles per hour for a few minutes, bubbles would commence to form in the gasoline filter and the level in the filter would gradually lower until the engine finally stopped.

It was learned that the owner was connected with a refinery and had access to a particularly high grade of gasoline. This high test product was responsible for the trouble by vaporizing and forming gas which gradually accumulated until it shut off the supply of gasoline. Gasoline of such volatility, of course, is not a commercial product, and for this reason the condition will seldom be found.

EDITORIAL

Guarding Our Fuel Reserves

QUITE a stir has been caused by the report of the Federal Oil Conservation Board addressed to President Coolidge, for one thing because it calls attention again to the approaching exhaustion of our supply of liquid fuels. Aside from the statement that "the total present reserves in pumping and flowing wells in the proven sands has been estimated at about 4½ billion barrels, which is theoretically but six years' supply, though, of course, it cannot be extracted so quickly," no definite assertion is made as to the amount of oil still in the ground in the United States, and no alarmist tone is struck. Numerous suggestions are made, however, for the more efficient exploitation of our petroleum resources, which, if they can all be practically applied, should certainly help materially in preventing waste.

From reading the report one gains the impression that the Board attaches the greatest importance to improvements in the methods of recovery. One great evil in this connection is the so-called competitive drilling. If a well is sunk in any particular neighborhood and oil is obtained, owners of adjacent properties or holders of oil leases thereon will immediately start in drilling too, because if the first well were operated alone, it would in time draw oil from the sands under adjacent properties, and would also depreciate the value of the oil leases on these properties by causing the gas pressure of the pool to decrease, thus making it more difficult to recover the oil from the sands.

To prevent such competition, which leads to the drilling of unnecessary wells, to overproduction and to wastefulness in the handling and use of the oil recovered, the Board recommends voluntary agreement between owners and lessees to restrict development. It points out that, since any such agreement could not appreciably influence the supply on the market, there would be no legal objection to it. The Federal Government, it contends, has no power to restrict development except on its own oil lands and in case it is clearly necessary in the interest of national defense. Moreover, it is pointed out that such legislation, having for its purpose to put a brake on the development of natural resources, does not evoke popular support. Therefore, the Board concludes, the major part of the measures that must be taken to protect our future supplies must rest upon the normal commercial initiative of private enterprise. This seems to be a sound view.

Business Cycles

SISYPHUS, that pre-historic Grecian figure who had the eternal job of pushing a rock up a hill only to see it roll down again, had nothing on the modern business man trying to do something about the Business Cycle, according to Messrs. Foster and Catching. In the current issue of the *World's Work* they endeavor to discover some rational cause for the seemingly eternal fluctuations of business and conclude that there is none—save in the minds of the business world.

At least, there appears to be no reason at present when information concerning business conditions is so readily and quickly available and so widespread throughout the country. As Kenneth M. Goode has expressed it, the man on the street now gets more news of business "each day than Garfield's Secretary of the Treasury got in a month; and the man in Wall Street gets more in a month than Garfield's Secretary of the Treasury ever got."

Some 16 or 26 reasons for the business cycle have been suggested ranging from sun spots to seven-year locust invasions but none of them can appeal to an intelligent person. In spite of all pessimists and calamity howlers the inhabitants of this world always have unfilled desires for material things; they always have money with which to buy some of the things they want; manufacturers are always ready and willing to supply them with goods; and the more goods the manufacturers turn out the more money will the people have with which to make purchases.

In fact, one might be forgiven for asking quite seriously why business should not continue "as usual" forever. If there is a reason only a student of mob psychology can state it accurately.

The Foreign Shows

THE foreign automobile shows this year bid fair to hold even more than their usual interest for American factory executives. Paris will have a show again this October after a lapse in its regular schedule of exhibitions last fall. The London show will be held about two weeks later, and a Berlin motor vehicle show immediately following.

A few engineers and executives will go abroad for one or all of these exhibitions, but most will have to rely on printed reports. *Automotive Industries* will get rather long cable reports of these important events from its special European representatives as usual, while full technical details will appear in mail stories written immediately after the openings.

With rumors already coming through that a number of European builders are planning to imitate certain phases of American practice in an effort to break our hold on certain export markets, and with renewed interest among our engineers in the possibilities of adapting to American needs certain phases of foreign technical practice, these overseas exhibits this year take on a renewed importance.

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Thursday, September 16, 1926

Production Near Capacity as Retail Movement Gains

PHILADELPHIA, Sept. 16—Production of motor cars continues at or near capacity for a large proportion of the factories. Deliveries at retail are speeding up as orders placed earlier for new models are being filled by the dealers. Generally speaking, it is one of the best fall markets the industry has seen, with all price classes participating.

The belief is held that the current rate of activity will be maintained at least until Oct. 1, when both production and sales are expected to begin to taper off. It is pointed out that with the great variety of models now produced by the leading manufacturers, the introduction of a new line is the signal for a substantial period of production merely to give the dealer a complete stock. But this fall dealers have had little or no opportunity to build up stocks because of the unusually high level of retail demand.

At about the time of the introduction of the new cars this summer dealers' stocks of used cars were also at a low point—the lowest of the year, if not in recent years. But the jump in new car business has been accompanied, as usual, by a gain in the number of second-hand vehicles held by dealers.

Truck production and sales have not shown anything like the gains in the last few weeks that motor cars have but the level of output for both classes is apparently enough to insure that 1926 will better 1925 in this respect. August production of cars and trucks was well over the 400,000 mark and September should be at least as high. The possibility of a very heavy slump in the last quarter is still present, but not taken at all seriously.

Dodge Brothers Offer Open Models in Colors

DETROIT, Sept. 16—Dodge Brothers touring cars and roadsters, like closed cars and sport roadsters, are now available in colors. Hood and body of touring cars and roadsters, the new sport type excepted, will be in coolie blue lacquer and cartouche stripe below the belt line. Fenders and shields are in black. Standard touring car and roadster have blue wood wheels and the special type natural wood wheels with black dagger striping on the spokes. Enamel steel disk wheels are available on either at slightly extra cost.

Distinctive touch is added to appearance of special touring car and special roadster by extra equipment, consisting of nickle front and rear bumpers, nickel radiator shell, special radiator emblem, with lock rear view mirror, automatic windshield cleaner, and scuff plate.

Electric Association to Launch Campaign

Will Promote Advantages of Authorized Service Stations —Catalogue Plan Studied

WATER GAP, PA., Sept. 15—A trade paper advertising campaign featuring the parts distributing function of the authorized electrical service stations and the facilities they have for handling electrical repair work for both the car dealer and the independent garage, will shortly be launched by the Automotive Electric Association as a result of action taken at its annual convention which closed here today.

The general sessions of the convention were devoted to the subject of distribution and service, and problems brought up by members of the association's field division were discussed at length. Particular emphasis was placed on the importance of providing some means of placing proper catalog information in the hands of car dealers and garagemen, and this subject will be studied by the association.

It was the consensus of the Standards Committee that the ratings of 300 and 450 watt bus generator sizes previously adopted, should be increased. Inasmuch as some technical data necessary to preparing specifications of the new sizes is not available at the present time, no definite action could be taken.

The outstanding event of the sports program was a hole in one by F. A. Oberhue, sales manager of United Motors Service, Inc.

Hertz Drops Rates 33%

NEW YORK, Sept. 16—Reductions in rates of 33 per cent are announced here by the Hertz Driv-ur-self stations. Minimum rate by the hour is now 75 cents and by the mile 12 cents, this applying on Ford open cars. On six-cylinder cars the hour rate has been fixed at $1.40 and 19 cents as the mile rate. Hour rates allow eight miles an hour and are intended particularly for persons who desire a charge system permitting of stops. The mile rate provides a minimum of two miles an hour with a rebate of one cent a mile for upwards of 50 miles per day, and a rebate of two cents a mile for upwards of 100 miles a day.

New York Proposes 5-Cent Fare Buses

NEW YORK, Sept. 15—Granting of a franchise to the city to establish a city-wide system of buses which will operate on a five-cent fare, was strongly urged by the Board of Transportation in a report filed today with the Board of Estimate sitting in Special Session called by Mayor Walker.

The report also urged that the city test in the courts the broad claim of the Public Utilities Corp. to a monopoly of transportation on all streets because of its franchise rights on certain streets.

Italy and United States in Schneider Cup Tests

WASHINGTON, Sept. 15—Only two nations—Italy and the United States —will participate in the Schneider Cup competition for seaplanes to be held at Hampton Roads, Va., October 24, announcement by the Naval Bureau of Aeronautics states. Italy has entered three small monoplane type of seaplanes, two of which will carry Fiat, Italian motors and the other a British Napier engine.

Auto Body Receiver Named

DETROIT, Sept. 16—The Central Trust Co., Lansing, has been named temporary receiver of the Auto Body Corp., of Lansing. Stockholders have filed a bankruptcy petition and a request for temporary receivership.

Packard Seeks 4000 Month

DETROIT, Sept. 15—Packard Motor Car Co. expects to produce approximately 4000 cars in September, according to Alvan Macauley, president. This would exceed the company's best previous month, which was August a year ago. Demand is strong for colors and variety of body models.

Howard W. Lester

HARTFORD, Sept. 14—Howard W. Lester, secretary of the Veeder Mfg. Co., president of the Hall-Thompson Co. and treasurer of the Post & Lester Co., with which he was associated in the earliest days of the industry, died last night at his home here of pneumonia. He was 53 years old and had been in ill health for several months.

H. O. Smith to Head Automotive Division

Former President of Premier and Widely Known Official Joins Hoover Staff

WASHINGTON, Sept. 15—Harold O. Smith, who for the past 30 years has been actively identified with the automotive industry, was this week appointed to be chief of the Automotive Section of the United States Department of Commerce. Percy Owen, who resigned to go with Dodge Brothers, Inc., was the former incumbent.

Secretary of Commerce Hoover, in announcing the appointment of Mr. Smith, declared that the department was fortunate in bringing to this office the experience that has been Mr. Smith's since he first became identified with the motor car and tire industries in 1894. He served with the Indianapolis Rubber Co. and was president of the G and J Tire Co. and various other rubber enterprises until 1903. In that year he was one of the organizers of the Premier Motor Mfg. Co., Indianapolis, and served as its president until 1914.

He was one of the organizers of the Motor & Accessory Manufacturers Association, serving as director; also an organizer of the American Motor Car Manufacturers Association, representing the motor car makers not members of the so-called License or Selden Association. When the National Automobile Chamber of Commerce was organized, he became active with that organization and served on the board until 1915. The following year he organized the J and B Tire, Charlotte, N. C., and served as its president until 1918.

During the war he served as a member of the War Industries Board, automotive division, in charge of passenger cars, later going with the National War Labor Board and served as an employer member until the Board was dissolved. In 1921 he assumed management of the Racine Automobile Car Co., Racine, Wis., which later went out of business. For the past three years Mr. Smith served as trustee of this concern. Mr. Smith assumes his new duties with the department on Sept. 20.

Drop in Ford Business Lowers Carolina Total

GREENSBORO, N. C., Sept. 11—A healthy increase in July new car sales sent the total registration for the first seven months of the year to within striking distance of the total for the same period last year, according to figures announced by Coleman W. Roberts, secretary of the North Carolina Automotive Trade Association.

Total sales for seven months ending July 31 are 36,399 compared with 37,450 a year ago. July sales were 6111 and July, 1925, the figure was 5247. In July, 1924, the registration was 4913. Decrease in Ford sales is the most significant feature of the recapitulation. Only 18,913 of the popular Detroit make have been sold during the seven months, compared with 26,006 last year.

"While the first seven months show a decrease compared with 1925, the year 1926 will disclose a larger new car registration than 1925," said Mr. Roberts in commenting on the report. "The automobile business in general is on a sounder basis than last year or any other year. Fewer longer trades have been made and there has been an overwhelming tendency on the part of dealers to exercise more caution. Dealers are more prosperous than in past years, although compared with 1925 sales to date have been less. This condition is not confined to this State or section but is national and few failures among automobile dealers are noted."

Ford New Car Talk Hurts Dealer Effort

DETROIT, Sept. 14.—The following is a copy of a message that has been sent to all managers of Ford Motor Co. branches by Edsel B. Ford, president:

"The greatest resistance to the sale of Ford products at the present time is the mental attitude of the dealers. They have heard so much about new models that they no longer have the necessary interest in the Model T. There will be no new model and your biggest job as manager is to work directly with the dealers to correct their feelings. Make them understand that to succeed they must at once clean up their minds, their shops and their personnel, eliminating all waste, give the best service they can, and go to work selling the best Model T that we have ever produced."

GMC August Output Sets All-Time Mark

DETROIT, Sept. 15—Every division of General Motors Corp. since the introduction of the new models in mid-year, has been unable to meet the demand from dealers and every division is oversold, the corporation declared. A new record was set in August when 134,231 cars were built, compared with April production of 122,742. Retail sales by General Motors set a record in August with 122,305 cars and trucks, compared with 78,638 in August a year ago, and further with 101,576 cars in July this year.

Truck Receiver Named

NEWARK, Sept. 13.—Federal Judge Runyon has appointed William Newcorn equity receiver of the Amalgamated Motors Corp., a holding company for a number of automobile concerns, having an authorized capitalization of $2,000,000, with a plant in Plainfield, N. J. The defendant company is directed to show cause Sept. 20 why the receivership should not be made permanent.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

NEW YORK, Sept. 16—Industrial and trade activity continued in large volume last week. Especially encouraging reports were received from the cotton textile industry. Commodity prices in general moved upward, while stock prices, after displaying considerable strength early in the week, declined during the last few days.

Sales of ten leading chain store companies last month reached a total of $45,099,231, which is above the figure for any other similar period, and exceeds by 8.43 per cent the total for August last year. Sales during the first eight months of the year aggregated $345,530,481, surpassing by 13.35 per cent the total of a year ago.

BUILDING CONTRACTS

Construction contracts awarded last month in 37 states, according to the F. W. Dodge Corp., had a total value of $600,808,000, marking a gain of 18 per cent over the July figure, but a decline of 2 per cent from that of August last year. With the exception of the latter total, last month's was the highest on record.

CAR LOADINGS

Car loadings of railway freight reached a new high record for all time during the week ended Aug. 28, with a total of 1,136,233 cars, as compared with 1,088,791 cars a week earlier and the previous record of 1,124,438 cars a year ago.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Sept. 8 (a holiday week) were 14.7 per cent below the total for the preceding week but 8.5 per cent above that of a year ago.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 148.5 last week, as against 147.6 in the preceding week and 147.3 four weeks earlier.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks declined $6,300,000 during the week ended Sept. 8, decreases of $12,100,000 in discounts and $6,700,000 in holdings of Government securities being largely offset by a gain of $12,500,000 in open market purchases. Note circulation rose $43,600,000, while deposits decreased $40,000,000 and reserves $4,400,000. The reserve ratio declined from 74.4 to 74.3 per cent.

Loans of reporting member banks increased $19,000,000 during the same period, with a gain of $37,000,000 in "all other" (mainly commercial) loans partially offset by decreases in secured loans. Investments rose $6,000,000, while borrowings from the Federal Reserve banks declined $8,000,000 and net demand deposits $5,000,000.

Cincinnati Milling and Heim Combine

Form Cincinnati Grinders, Inc., With $1,500,000 Capital to Improve Service

CINCINNATI, Sept. 13—Cincinnati Grinders, Inc., has been organized here and incorporated at Columbus under Ohio laws with a capital stock of $1,500,000 to take over the grinding machine business of the Cincinnati Milling Machine Co. and the centerless grinder business of the Heim Grinder Co. of Danbury, Conn. The new company has acquired the Triumph Electric plant at Oakley, near Cincinnati, and will convert it into a modern plant for the manufacture of grinding machines. This new plant is expected to commence operations with a force of several hundred men early in 1927.

In explanation of the combination it is stated that the grinding machine business of both predecessor companies had outgrown their plant facilities and made the provisions of new and better-equipped plants imperative. It was thought that a combination of the resources and organizations would make it possible to render greater service to customers at reduced cost.

P. O. Geier is president of the new corporation; George W. Binns, secretary, and F. M. Angevin, formerly of the Heim Grinder Co., treasurer. R. C. W. Harrison, formerly grinding machine engineer of Churchill Machine Tool Co., Manchester, England, is a director of the company, as is C. Booth, formerly works manager of Heim Grinder Co. and previously engineer of Heald Machine Co.

Chrysler 8 Months' Sale Reaches 100,772 Total

DETROIT, Sept. 13—Chrysler Corp. reports production now at a rate of 800 cars daily. During the first eight months of the year the production total was 100,772 as compared with 89,722 during the same period last year. Exports during the first eight months approximated 9000 cars as against 6938 in the same period in 1925.

President W. P. Chrysler said the company expects a considerable improvement in the business of the last four months over business in the same months last year. Dealer stocks and cars in transit are below normal, he said.

Moon Adds 6-60 Sedan

ST. LOUIS, Sept. 16—A four door sedan, priced at $1195 is announced by the Moon Motor Car Co. as the latest addition to its 6-60 line, which is powered by a Moon-Continental 2-7/8 by 4¾ in. engine. The lower body panels are finished in Yucca gray lacquer with the upper structure in black while the belt is Russian tan and the belt mouldings are striped with Nile green. Front pillars are of the narrow, safety vision type with swinging windshield to provide ventilation. The interior is finished with Chase combination mohair and the rear seat backs as well as the cushions are removable. Equipment includes four-wheel hydraulic brakes, cam and lever steering gear, Hartford shock absorbers and automatic windshield wiper.

Overland Reductions Range $40 to $120

TOLEDO, Sept. 13—Price reductions ranging from $40 to $120 were made this week by Willys-Overland Co. on its Overland four and six-cylinder models. Prices in the Whippet line are dropped under the new schedule from $735 on the sedan to $695, and from $735 on the coupe to $685. In the Overland six line, the deluxe sedan is reduced from $1095 to $975, the 2-door sedan from $935 to $835; the coupe $895 to $825, and the touring car from $895 to $825.

These prices on the six are for two-wheel brake equipment, four-wheel brakes being furnished at an additional cost of $60.

No changes are made in the prices of the Willys-Knight lines.

The reductions are made at the end of the company's largest sales month and are made in the interest of still further increasing the sales volume. The company is aiming to sell 100,000 of its Overland and Willys-Knight products between now and the first of the year.

All Morris Cars Reduced

LONDON, Sept. 4 (*by mail*)—New prices on all Morris models are as follows:

11.9 H. P. MORRIS-COWLEY, with rear brakes and simplified equipment

Two-seater	£148 10s.
Four-seater	158 10s.

With four-wheel brakes and full equipment

Two-seater	£160 0s.
Four-seater	172 10s.
Coupe	182 10s.
Sedan	190 0s.

14/28 H. P. MORRIS-OXFORD, with four-wheel brakes and full equipment

Two-seater	£220
Four-Five-Seater	240
Three-quarter coupe	245
Sedan	265
Cabriolet	295
Landaulet	325

The new prices represent considerable reductions, but these are to some extent negatived by the dropping of the first year's free insurance scheme.

Rental Stations Increase

TOLEDO, Sept. 13—Willys-Overland Co. reports car rental stations now in active operation in 150 key cities, with a large increase in the National Auto-Rentors Association, Inc., which was fostered by the company. More than 2000 Willys-Knight and Overland automobiles are now in active service through this car-rental service. The company plans to install car rental stations in all cities of more than 10,000 population.

Trust Company Acts to Sell Out National

Creditors Are Given Opportunity to File Claims Previous to Foreclosure

ST. LOUIS, Sept. 11—Thirty lawyers from all sections of the country gathered at the Federal Building here this week, to lay claim to local assets of the National Motors Corp., which went into receivership in January, 1924, with a loss of nearly $8,000,000 to thousands of investors.

National Motors was a merger of eight companies including the Traffic Motor Truck Corp. of St. Louis. National Motors, also known as Associated Motors Industries, manufactured Traffic Trucks and Jackson, National and Dixie Flyer cars. Properties of the company once were valued at $10,000,000.

The Union Trust Co. of Chicago, trustee for holders of $6,000,000 in bonds issued by National Motors, has foreclosed on the corporation's plants in Dayton, Indianapolis, Buffalo and Saginaw, Mich., and is preparing to foreclose on the plants in St. Louis, Louisville and Boston.

Preliminary to the foreclosure here, creditors were given an opportunity to present preferred and general claims at the hearing conducted here by Special Master William H. Allen. Hearings were held in the morning and afternoon of Sept. 8 and will be resumed Oct. 13.

Victor Increases Stock and Adds 8 Directors

ST. LOUIS, Sept. 13—Stockholders of Victor Motors, Inc., have voted to increase the capital stock of the company $500,000 in 5 per cent preferred participating stock. Approximately $300,000 had already been subscribed by the stockholders.

It was also voted to increase the board of directors from seven to fifteen, twelve of whom were elected as follows: Guy Wilson, president, Sherman H. Dorsey, vice-president and chief engineer, Harry C. Barker, general counsel, Hugo F. Buder; Charles Dapron, general superintendent; William P. Erhart, John P. Fendler, Paul A. Gayer, Henry A. Herchert, Frank Leibinger, Henry A. Schoknecht and Edward E. A. Reidinger, secretary and treasurer.

Janesville on 466 Daily

JANESVILLE, WIS., Sept. 11.—The Janesville (Wis.) Chevrolet plant has been placed on a production schedule of 466 cars daily for September, with prospects for a 500-car daily output after Oct. 1. Construction work on additions costing $250,000 or more to the Chevrolet and Fisher body plants at Janesville is well under way and the new facilities are expected to be ready by Nov. 1 or 15. The August schedule was 425, so that September output is 40 higher.

Guayule Will Yield U. S. Rubber Needs

Chemists Depict Possibilities From Home Crops — Synthetic Rubber Unlikely

PHILADELPHIA, Sept. 13—Development of a guayule industry in the United States, under which farmers would raise crops of this rubber bearing shrub and sell it to rubber producing factories, much as the beet-sugar business is carried on, was portrayed at the rubber symposium held by chemists here for the convention of the American Chemical Society.

Speakers presenting the possibilities of guayule rubber were Dr. David Stence and G. H. Carnahan, officers of the Continental Rubber Co. It was indicated that 40,000 men continuously employed during the year could produce from guayule the billion pounds of rubber used by American rubber industries yearly.

There is no indication that synthetic rubber will eventually replace crude natural rubber, said Dr. William C. Geer, vice-president of the B. F. Goodrich Co., reading a paper by Richard Weil, of Hanover, Germany. No synthetic rubber has yet been produced which duplicates the qualities of natural rubber. Further research may disclose it, he said, but it would probably be too expensive for commercial use.

It is more likely, said Dr. Geer, that the time will come when effort will be made to make oil from rubber for motor fuel, instead of trying to create rubber from oil.

Akron Skeptic of Guayule

AKRON, Sept. 13—Akron rubber manufacturers are skeptical of the claims set forth by officials of the Continental Rubber Co. recently at the American Chemical Society convention that the Guayule shrub will meet the major requirements of production. Practically no manufacturers in this district, it was learned, now are using Guayule in the production of automobile tires. One company which had a considerable quantity on hand is disposing of its stock.

The plant, which has often been mentioned as a possible substitute for crude rubber, has a limited use here in the manufacture of mechanical rubber goods. As the official of one rubber company explained, Guayule has not come into general use because it contains too large a percentage of resin, which interferes with compounding operations. Extracting of the resin adds to the cost of the product, and at the present market prices the use of crude rubber is said to be more economical.

When rubber was selling around $1 a pound a year ago, local brokers say there was a considerable demand for Guayule, which could be bought for about 25 cents a pound. Consumption of the plant dwindled, however, as the price of crude rubber dropped.

Authorities in the industry believe there might be an increase in the use of Guayule in mechanical goods lines, if there is an improvement in the rubber from the shrub, which grows wild in Mexico and Texas and is under cultivation in Southern California. Unless there is a great scarcity of crude rubber, they feel, it will have little or no economic value in the manufacture of tires.

HOOVER ENDORSES GUAYULE GROWING

LOS ANGELES, Sept. 13—That the experiment now being conducted in Southern California in the growth of guayule rubber on a 200-acre plantation gives indication of resulting in development of unusual importance, was the declaration in Los Angeles of Herbert Hoover, Secretary of Commerce, during his visit here following a tour of the State. Mr. Hoover reported that the experiment at the Salinas plantation has proven successful, with a crop of 2000 lb. to the acre being produced in four years time. This rubber, he said, is on a parity with Para rubber, obtained only from trees after seven years of growth.

The climate and soil in California seem favorable to rubber growth, declared the cabinet member, and the Salinas experiment and another plantation development between Los Angeles and San Diego may lead to the development of a great industry here.

Studebaker Sedan Sales Double Any Former Month

NEW YORK, Sept. 11—Studebaker is working at capacity on new models and has sold twice as many sedans in August as in any one month of its history, according to A. R. Erskine, president of the Studebaker Corp., here today.

August net is estimated by President Erskine at from $2,000,000 to $2,500,000 after taxes and reserves, based upon sales of 12,600 cars in August. Mr. Erskine expects September to show about the same as August. July earnings were relatively small because of the introduction of new models.

Frigidaire Sales Separate

NEW YORK, Sept. 14—Frigidaire Corp. has been formed as a new subsidiary of General Motors Corp., to take over the distribution and sale of electric refrigerators manufactured by the Delco-Light Co. This subsidiary will make it possible to segregate the electric refrigerator from the electric light business. Permanent officers and directors of Frigidaire Corp. will be practically the same as those of the Delco-Light Co.

Tire Output Drops After August Peak

Twenty Per Cent Reduction to be Effective—Expect Spring Dating Revival

AKRON, Sept. 13—Following record-breaking production of tires during July and August, a seasonal slackening in demand from dealers and motor car manufacturers has set in, and leading rubber manufacturers have begun to curtail operations.

Total tire output in the Akron district, which reached more than 130,000 casings a day during August, has been reduced by approximately 15 per cent, and probably will be down 20 per cent by the end of the month. Stocks of dealers, which were depleted at the beginning of the second half year, have been replenished to a large extent. With the touring season drawing to a close retail business is expected to gradually taper off this month.

The Rubber Association of America has taken no definite action on the question of spring dating, but it is likely, according to well informed authorities, that the policy will be revived this year, to stabilize production during the dull season. Manufacturers may begin accepting orders from dealers in October or November for delivery in April, May or June.

Manufacturers abolished spring dating for a while last year in order to conserve crude rubber, which then was scarce and was selling around $1 a pound. Inasmuch as rubber has dropped to about 40 cents a pound, and with an ample supply apparently available for future needs, authorities say there is no particular need for conservation of the commodity.

The Goodyear Tire & Rubber Co., which manufactured the largest number of tires in its history during August, has curtailed operations to a basis of about five days a week in some departments. Production cuts also have been made by Goodrich, Firestone, Miller, and others. Several of the medium sized and smaller companies are still running at capacity, because of back orders on hand.

Fisk Maintains Output

BOSTON, Sept. 11—Fisk Rubber Co. enjoyed a good August business with sales of over $7,000,000. Maintenance of the daily output schedule of 25,000 tires (14,000 at Chicopee Falls and 11,000 at Cudahy), which has prevailed for several weeks, represents a satisfactory volume thus far this month.

Hungerford Adds Space

PHILADELPHIA, Sept. 13 — The Philadelphia warehouse of the U. T. Hungerford Brass & Copper Co. has been moved to 46 N. Sixth Street, where facilities are available for improved service and for carrying increased stocks.

Ford Tests New Gear in Present Type Car

Would Add Shift to Present Planetary System to Increase Speed

DETROIT, Sept. 15—Adherence to the planetary gear-shift system as now embodied in its cars is expected to continue to mark the policy of the Ford Motor Co. but experiments now being made indicate that this system will be revised to permit of higher speeds in low gear. This will probably be accomplished by the introduction of another forward speed, with a stepping down of the driving ratios of the present low and high speeds.

Thus the car would approximate the same range of speed and hill climbing potentialities of sliding gear-shift cars of similar price and size. Ford executives believe the public is not insistent on sliding gears as such and that if another forward speed may be added through the present selective system the main object will have been accomplished. From its own standpoint, the cost of such a change would be nominal, and it would permit the company to continue its adherence to the planetary gear principle. Furthermore there would be no sharp depreciation in the values of Fords now in owners' hands.

U. S. Survey Shows Buyer Wants Abroad

WASHINGTON, Sept. 15—A detailed survey of preferences in construction and equipment of automotive products in markets throughout the world has been completed by the Automotive Division, Department of Commerce, and its results compiled in a 50-page bulletin, issued as a guide for all exporters of automotive products. The bulletin is known as Trade Information Bulletin No. 431, and may be obtained from the Superintendent of Documents, Government Printing Office, Washington.

In a foreword in the bulletin, Julius Klein, director of the Bureau of Foreign and Domestic Commerce, states that American automobile shipments to foreign markets in 1926 may surpass those of previous years, and he urges this growing importance of automobile exports as a fact to impress on American shippers the need for studying foreign tastes and preferences in automobile manufacture.

Mexican Imports Increase Despite Reported Boycott

LAREDO, TEXAS, Sept 11.—If export figures are to be taken as a criterion, the reported economic boycott of the clericals in Mexico has not affected the sale of American automobiles in that country. During the month of August a total of 480 automobiles was shipped into Mexico through this port of entry. This was an increase of sixty as compared with the corresponding month of last year.

It is pointed out by dealers that the best months for the sale of cars in Mexico are October, November and December, and it is indicated by orders which they have already received that business during the remainder of the year will be much better than during the last four months of 1925. The most notable increase of the sales of automobiles is in Mexico City which already has been given highway connection with a number of cities by the carrying out of the good roads program of the Mexican Government.

Jordan Sees Trend Toward Smaller Car

DALLAS, Sept 16.—"The car of the future will be the kind that women want for convenience. A lighter, shorter, smaller and easier-to-turn car, one that can be parked in a diminutive space and will accommodate two or three persons." That is the opinion of Edward S. Jordan, president of the Jordan Motor Car Co., who was in Texas this week conferring with Jordan dealers.

Mr. Jordan declared women dominate the buying in the automobile world now and will do so more thoroughly in the future. He said men may pay the money, but they buy the car the women want. The manufacturer declared every advertisement written by the Jordan company is written for women readers and women who will figure in buying automobiles. He said the coming car will be speedier and probably will make 50 miles to a gallon of gas. They will be compact and arranged to take up as little room as possible which may mean the wheels will be set further under the bodies.

Commercial Plane Growth Soon to Support Industry

NEW YORK, Sept. 14—Recent rapid progress in the aviation industry may soon free it of its present dependence on War and Navy Department orders, the Daniel F. Guggenheim Fund for the Promotion of Aeronautics points out.

In 1914 there were only 16 firms engaged in producing aircraft, which were almost exclusively for the government, while last year there were 39 such establishments producing aircraft for all purposes. In 1925 these 39 firms produced 621 airplanes and 78 seaplanes. At the close of the year there were 207 planes under construction, representing a volume of $1,426,000 of aircraft business.

The entire American aircraft industry last year turned out products equivalent to a total value of $12,277,000. In 1914, the total value of all aircraft produced was $789,872.

Sunstrand Has Catalogue

ROCKFORD, ILL., Sept. 13—Sundstrand Machine Tool Co. has prepared new catalogues descriptive of the Sundstrand stub lathe which are now available for mailing to those companies interested.

Survey to Disclose Time Sales Losses

Finance Company Convention Will Hear Results of Past Year's Experience

CHICAGO, Sept. 16—The results of two surveys of retail automobile sales financing in the United States will be submitted to the National Association of Finance Companies at its annual convention in Chicago, Nov. 15 and 16, by C. C. Hanch, manager.

Mr. Hanch has sent a questionnaire to all finance companies, calling for the information from which to compile this report. The questionnaire asks each finance company to give its experience on the following points:

NEW AND USED CARS

1. Average loss per repossessed car which had 12 equal monthly payments.
2. Average loss per repossessed car which had 16 to 18 equal monthly payments.
3. Average loss per repossessed car which had balloon note, or more than 18 equal monthly payments, if handled.

NEW CARS

4. Percentage of repossessions where down payment was 33 1/3 per cent of cash price or 30 per cent of time selling price.
5. Percentage of repossessions where down payment was 25 per cent of time selling price, if handled.
6. Percentage of repossessions where down payment was less than 25 per cent of of the time selling price, if handled.

USED CARS

7. Percentage of repossessions where down payment was 40 per cent of the cash price or 37 per cent of time selling price.
8. Percentage of repossessions where down payment was less than 37 per cent of time selling price, if handled.
9. Used Car Paper is ——— per cent of total paper handled (volume in dollars and cents).
10. Used Car Paper with Recourse is ——— per cent of total **USED CAR** Paper handled (volume in dollars).

Other questions consider the volume of used car paper.

Seek Essays on Highways

WASHINGTON, Sept. 13—The American Road Builders' Association has sent out a nation-wide appeal to engineers in state, county or municipal highway departments to submit short essays on new highway developments. Prizes valued up to $1000 are offered.

Charles M. Upham, managing director of the association, is in charge of the contest. The essays should be forwarded to the local office of the association.

Rubber Imports Decline

NEW YORK, Sept. 14—August crude rubber imports dropped from 37,087 tons the month before to 25,982 tons, the Rubber Association of America reports. Total for the first eight months of 1926 increased to 271,693 tons as against 247,289 tons in the same period of 1925.

Men of the Industry and What They Are Doing

U. S. Delegates to Milan Received by Mussolini

Members of the American delegation to the International Roads Congress, which closed this week at Milan, were received by Premier Mussolini this week at his offices in Rome.

T. H. MacDonald, chief of the Bureau of Highways at Washington, talked at length with the Premier about Italian roads, declaring the road between Milan and Como could be taken as a model for all new roads in Italy.

The Premier told the Americans that Italy intended to emulate the achievements of the old Romans and build roads suitable for all transport requirements throughout the land. He was in excellent spirits while receiving the Americans. Later the delegation visited the capitol and were received by Governor Cremonesi of Rome.

Friedlander in Seattle

A. L. Friedlander, vice-president of the Dayton Rubber Mfg. Co., of Dayton, O., is in Seattle this week making arrangements for the establishment of a branch of his company. Up to the present time the concern has devoted itself entirely to business nearer the factory. But now, Mr. Friedlander said, the company has grown to such proportions that expansion on the Pacific Coast is necessary.

Johnson Service Engineer

C. H. Johnson has been appointed an engineer in the service department of the Timken Roller Bearing Co. He will have direct charge of installations in automotive and industrial applications. Mr. Johnson has had much experience in this field while with the Timken company and is regarded as well qualified to direct this work.

Marx Takes Over Branch

Rene J. Marx, who has been manager of the Los Angeles factory branch of the Locomobile Co. of America, Inc., since 1923, has been awarded the Locomobile distributorship. The new concern will be known as the Locomobile Co. of Southern California. No change in policy or personnel will be made.

Keegan With Ohio Parts

Ohio Parts Co., manufacturer of O-P battery terminals and cables, announces that J. "Frank" Keegan is now a factory representative, covering a territory which embraces Illinois, Iowa, Wisconsin, Minnesota, North Dakota, South Dakota, Missouri, Nebraska and Kansas.

Nettleton on Trip

Ralph B. Nettleton, western sales manager of Chandler-Cleveland Motors Corp., left this week on a three months' territorial trip reaching to the Pacific Coast. The first part of the trip will be through the central west.

M. H. Pettit

New vice-president and assistant general manager of Nash Motors Co.

Colin Campbell on Coast

Colin Campbell, vice-president of Durant Motors, Inc., was a visitor in Pacific Coast cities this week. While in Seattle, Mr. Campbell made the statement that Flint cars are now being manufactured at the big Durant plant at Elizabeth, N. J., and that more aggressive selling policies will be inaugurated immediately in connection with both Flint and Star cars throughout the United States. Special attention will be given to the Pacific Coast district, he stated.

Duggan Vice-President

J. Ross Duggan, manager of export of Westinghouse Union Battery Co., has been appointed vice-president in charge of sales and has taken up his duties at Swissvale, Pa. While in charge of export activities at New York, Mr. Duggan was prominently identified with the automotive industry both domestic and foreign.

Wright Joins Paint Firm

E. C. (Doc) Wright, formerly of Cassidy & Co., automotive sales agents, has recently joined the sales force of Devoe & Raynolds Co., Inc., New York, and will will center his sales efforts on car manufacturers, body builders and large automotive users of lacquers, paints and varnishes. Mr. Wright is widely known throughout the industry.

Durant Appoints Marr

Frank H. Marr has been made sales manager of the Star Car Division of Durant Motors, Inc., in charge of New England wholesale business in Star and Flint cars, with headquarters in Boston.

Willys-Overland Officers Entertain $100,000 Club

Willys-Overland officials entertained the members of the 1926 retail salesmen's $100,000 club, membership in which is confined to those salesmen of the retail sales organization who sell $100,000 worth of merchandise in the course of a year. Following a tour of the factory the men were guests at a dinner at the Inverness Golf Club.

On the second day of the convention, the salesmen were guests at the Wilson Brothers Foundry Co., Pontiac, where they were entertained by David Wilson.

Schaffer Joins Diamond State

O. H. Schaffer, gear engineer, is now representing the Celoron Timing Gear interests of the Diamond State Fibre Co., in Illinois, Indiana, and Wisconsin. Mr. Schaffer came to Diamond State from the Studebaker Corp., where he specialized in gear problems. His headquarters are at 1656 Besley Court, Chicago. E. F. Behning, who formerly covered this territory, together with Michigan and Ohio, is now devoting his entire time to Michigan and Ohio.

Dingman With Diamond State

R. E. Dingman has been appointed district manager of the Montreal office of the Diamond State Fibre Co. of Canada, Ltd., succeeding J. A. Regan, who has gone to Pittsburgh as district manager of the company's office there. Mr. Dingman is a Canadian, and has been associated with the Imperial Oil Co., Ltd., and Beaver Products Co., Inc.

Hotel Named For Rickenbacker

A new hotel at Smackover, Ark., has been named the "Rickenbacker" in honor of Capt. E. V. Rickenbacker. The latter attended the opening and delivered a speech to the citizens of Smackover on that occasion.

M.&A.M.A. Mails Members Advance 1927 Show Plans

NEW YORK, Sept. 15—The Motor & Accessory Manufacturers Association mailed this week the first of this year's issue of Show News, the miniature newspaper published the last two years giving advance details of National Automobile Show plans. Literature for the National Automobile Shows of 1927, including application blanks, space diagrams and rules and regulations, already have been sent to members of the association.

The M. & A. M. A., in cooperation with the National Automobile Chamber of Commerce, will assign space to its members in the sections devoted to parts, accessories and service equipment. Power will be provided in the service equipment sections at both New York and Chicago shows so that garage machinery and tools can be demonstrated in operation to the trade and to the public.

Steel Buying Holds High in September

Much Buying in Small Lots Marks Season—Higher Sheet Prices Now General

NEW YORK, Sept. 16—Automotive demand is at a somewhat better rate than the steel industry had expected for the middle of September. The chief complaint heard is that automotive orders make too many bites of a cherry, and that, especially in the case of full-finished automobile sheets, some motor car manufacturers impose quality conditions that make mass production well-nigh impossible. A general grievance of steel mills is that at the peak of urgent demand, the needs of passenger car manufacturers call for too much equipment that is doomed to idleness during dips in their operations.

The automotive industries are a convenient peg on which to hand the blame for the hand-to-mouth buying that has become almost universal among industrial steel consumers of all classes. That steel manufacturers have given up hope of altering this condition is shown by the general tendency to adjust equipment and man-power to make both more flexible. These plaints, however, furnish an excellent smoke screen for the advances that have come into force as the result of the change in base-gages. Full-finished automobile sheets are now generally held at 4.25 cents on a 20-gage basis. This makes the price of 22-gage 4.40 cents, compared with 4.20 cents a month ago, an advance of $4 per ton.

Purchases of strip-steel for fender and running board stock and of tubing for exhaust pipes by the largest, low-priced motor car producer came in for some attention, but are, in fact, of a routine character. Finishers of cold-rolled steel bars sought early this week to stave off commitments being anxious for more light on the fourth-quarter hot-rolled bar market before booking orders. Alloy steel makers report better inquiries and more liberal orders from motor car manufacturers.

The semi-finished steel market shows no change, and those who dominate the sales policies of sheet-bar producers say that sheet rollers are indebted to them for the relative stability of the market at this time because they maintained the price of sheet bars at a time when, by all rules of supply and demand, sheet bars should have yielded in price.

Pig Iron—Automotive foundries are buying in better volume, and there is greater interest in market developments. Prices continue on an even keel with $17.50, valley, for No. 2 foundry the basis. More iron is moving from furnaces, and producers believe that they have weathered the worst of the inroads made by foreign competitors.

Aluminum—Larger consumers observe with eager interest developments with reference to greatly increased world output. Not only will Canada contribute steadily growing tonnages, as the new plant of the American producer attains its full strides, but Norway and Germany are both being heard from as augmenting production. Extensions at Norwegian works are looked for to better the present annual output of 24,000 tons in that country. Gentlemen's agreements may serve well enough for a time to delay more spirited competition, but once the output weighs more heavily on the market, prices are certain to be affected, all artificial arrangements to the contrary notwithstanding. For the present, quotations for both ingot metal and rolled products are unchanged.

Copper—Important foreign interests are lined up against the export combine which American producers are seeking to perfect, and domestic prices are being held in check by maneuvers in London. Connecticut Valley brass mills pick up what bargains they can. The general market, however, is steady.

Tin—Tin has moved into a new high position for the year. Consumers are leaving the market to the speculative element.

Lead—The market is fairly easy.

Zinc—Slight advances resulted from a contraction in the surplus.

Toledo Seeks Continuance of Bock Bearing Plant

TOLEDO, Sept. 11—Definite decision as to the future of the Bock Bearing plant here, now known as the Toledo Bearing Co., since it was purchased a few weeks ago by the Timken Roller Bearing Co., of Canton, has not been made but it is almost certain that the Timken Company will concentrate its automotive business at the Canton and Columbus plants.

Nearly 500 employees of the Bock plant have been laid off since the change in ownership of the plant. It is understood that many have been offered employment by the company at its other plants.

A delegation of Toledo business men visited President H. H. Timken at Canton Friday to discuss the matter with him, and they are hopeful that the Toledo plant may be devoted to the development of railroad and industrial roller bearings—a field which is considered very extensive and promising for the future.

British to Try Argyll

DETROIT, Sept. 11—A special Argyll single sleeve valve engine for use in airplanes is being developed in the British government laboratories in London, on the recommendation of the Aeronautical Research Committee of the government, according to the Continental Motors Corp., owners of world rights on the Argyll engine.

In a report submitted to Sir Samuel J. Hoare, Secretary of State for Air, the committee calls attention to the apparent practicability and efficiency of the single sleeve valve engine for use in aviation.

Australian Market Aided by New Roads

Hudson Export Manager Reports Conditions Favorable for Continued Large Trade

DETROIT, Sept. 13—"American automobile manufacturers may continue to look to Australia and New Zealand as excellent foreign markets," said J. H. Rees, export manager of the Hudson Motor Car Co., upon his return to Detroit after spending four months in those countries making a study of conditions.

"Australia will spend $100,000,000 developing a highway system during the next five years," said Mr. Rees, who sees in this movement the opening up of still greater markets for motor cars. "In South Australia there is now one car for every 9 people," he said, "while the ratio varies in other states to as high as one car for every 25 people. A better highway system will open up vast territories for many of these residents. The business outlook for the future is very good," he said, "and this, coupled with the new roads, will reflect in increasing orders for automobiles."

"About 80 per cent of the cars imported are of American make," he said, adding that small English cars and a small Italian automobile are also enjoying a good market. Australia will never give up the American product for the European. The American car, with its standard tread and larger motor, is much better suited to the existing conditions in Australia, than are the European types with their smaller engines and narrow treads.

Body builders in Australia are building an excellent class of bodies and competition is so keen among them that many manufacturers are now shipping cars without bodies, it being cheaper to buy and mount the body after arrival there. The Australians are also building an excellent grade of tire which sells at a reasonable price.

Conditions in New Zealand were also pictured by Mr. Rees as excellent, and everything augurs well for a continuance of good automobile business in that country.

G.M.C. Gives Oshawa Pump

OSHAWA, Sept. 14—The recent annual picnic of the General Motors of Canada, Ltd., drew no less than 15,000 people. The evening program was featured by the presentation of a new fire pump to the city by R. S. McLaughlin, president, on behalf of the corporation. Mr. McLaughlin in his address said that the dark days of this spring had passed, and that the company is emerging upon times which give great promise of big things for the future. He believed that the period of uncertainty had passed once and for all, and that with the hearty cooperation of the loyal staff of General Motors of Canada, the company is on the eve of a new era.

Rim Output Takes Sharp Turn Upward

August Total Gains 600,000 Over Former Year— Year Exceeds 1925 Total

CLEVELAND, Sept. 10—Rim production took a decided jump during August and brought totals for the first eight months of this year to 17,697,795 as against 17,577,746 for the same period of 1925, according to the report of the Tire & Rim Association of America, Inc. The total for August this year was 2,378,850 and for August, 1925, 1,781,401.

August production totals in principal sizes were as follows:

Clincher	Aug., 1926	Aug., 1925
30 x 3½	169,462	260,556
Balloon		
28 x 3½	987,323	466,527
28 x 4	226,609	337,795
29 x 4	351,453	137,775
30 x 4½	207,578	191,434
30 x 5	13,628	21,482
31 x 5	34,771	48,915
High Pres.		
30 x 3½	13,838	34,196
32 x 4	32,663	34,284
32 x 4½	45,445	31,215
Truck "20"		
30 x 5	109,145	59,618
Truck "24"		
34 x 5	2,071	7,339
36 x 6	3,541	8,257

A decided increase was noted in production of rims for balloon tires, 82.3 per cent of the total being for these tires as against 71.4 per cent last year. Clinchers decreased from 17.4 per cent of the total in 1925 to 7.2 per cent this year.

Hupp Has Record August

DETROIT, Sept. 11—The Hupp Motor Car Corp. broke all previous sales records for August, this year, according to O. C. Hutchinson, general sales manager. Sales for the month were 50 per cent greater than the best previous August. During the past 11 months, shipments gained 54 per cent and retail sales 57 per cent over the corresponding period a year ago. Export shipments showed a gain of 68 per cent over the same period in 1925. On Sept. 1 the company had orders on hand for $1,000,000 worth of Hupmobile eights and $2,000,000 worth of Hupmobile sixes.

Share of Export Business to Aid Durant of Canada

MONTREAL, Sept. 14—Durant Motors of Canada, Ltd., is taking over a portion of the export business of the parent firm and recently made the first shipment the Canadian company has undertaken. The total sales of the company to date this year are 27 per cent higher than for the same period last year. The officials of the company believe that the Canadian company can earn money on a 10,000 car production basis. It is expected that the company will manufacture at least 10,000 cars this year.

The Canadian company owns one of the best equipped and best maintained plants in Canada, which cost in the vicinity of $1,725,000 and is carried on the books at $1,477,239. On Dec. 31, 1925, current assets of the company stood at $1,405,152 and current liabilities at $305,402. A betterment in the financial condition of the company since that time is reported.

Bertram's Regain Plant

DUNDAS, ONT., Sept. 11—The Bertram Machine Plant in Dundas, which for several years has been operated as a Canadian branch of the Niles-Bement-Pond Co. of the United States, has been restored to Canadian ownership with the Bertram interests in control, it is stated. The latter have acquired the plant, and also the plant of the Pratt & Whitney Co., also in Dundas.

Chicago Bank Shows Car Stocks Higher

Used Cars Gain 46 Per Cent Over 1925 Total—Monthly Reductions Slight

CHICAGO, Sept. 10.—Wholesale and retail distribution of automobiles in this Federal Reserve District in July fell off from June, which in turn had shown a reduction from May. Wholesale distribution last month was below last year, but retail distribution of new and used cars was slightly ahead of 1925. Cars on hand at the end of month remained above last year. The following table shows percentage changes in situation of representative dealers and distributors during July:

	% change from June, 1926	% change from July, 1925
Number new cars sold wholesale	−16.4	−17.2
Value new cars sold wholesale	−18.3	−19.1
Number new cars sold retail	−12.4	+ 2.9
Value new cars sold retail	−18.7	+ 1.8
Number new cars on hand July 31	−19.8	+ 7.0
Value new cars on hand July 31	−18.5	+14.5
Number used cars sold	− 9.3	+14.8
Number used cars salable on hand	− 8.0	+46.7
Value used cars salable on hand	− 8.2	+20.7

At end of June reporting dealers had 55.9 per cent more new cars on hand than on the corresponding date last year, with value 49.8 per cent higher. Used cars on hand June 30 were 43.4 per cent greater in number. Sales on deferred payment plan reported by 37 dealers were 49 per cent of their total retail sales, against 46.6 per cent in June and 42 per cent in July, 1925.

Developments of the Week in Leading Motor Stocks

NEW YORK, Sept. 16—Motor shares developed an irregular trend during the week just past, with a smaller turnover showing that public attention, for the time being, was being diverted to other groups. There were a few gains but more losses, and significant moves were almost absent.

The trend toward weakness ran counter to trade reports to the effect that most of the companies were enjoying a record late summer and early fall business, with no prospect of a slump. Indications were that the group suffered from the general uncertainty of the whole market, where operations for the advance had been meeting opposition.

A feature of the week was the rapid rise, on a heavy volume of trading, of Yellow Truck and Coach to a point above 39, followed almost immediately by a drop to around 34, with a fractional net gain on the week. The strong following that this company has gathered in Wall Street on reports of rapid expansion of its bus and car rental business, coupled with rumors of a rental plant for its trucks, was confounded by an interview issued by John Hertz, chairman of the board, which was accompanied by an avalanche of selling orders.

Mr. Hertz's statement was to the effect that current operations did not justify the rise in the stock; that earnings were running little above former levels, and that the company was faced with the problem of maintaining dividends on a much increased capital structure. The selling was met with strong support, considering the unusually unfavorable nature of the chairman's statement.

General Motors also showed a net gain and with Studebaker was the outstanding exception to the trend among the car shares. This week the South Bend Company's stock advanced to well over 60 on Mr. Erskine's report of the favorable reception to the new models which was resulting in capacity production at the factory.

Stewart-Warner was well bought in the accessory group, but for the most part these shares, as well as those of the tire companies were listless.

The report of a new combination among the car manufacturers, to be engineered by William C. Durant, persisted during the week and some Wall Street observers thought it was borne out by an interview with Mr. Durant cabled from Europe, in which he spoke of a number of important developments impending in the motor and oil industries.

Industry Payrolls Show Plants Active

Prospects Regarded Good for Full Fall Employment — Most Industries Gain

WASHINGTON, Sept. 15—Employment in the automotive industry, according to a survey just announced by the U. S. Department of Labor, as of Sept. 1, shows that there are good prospects for full fall employment, and that the "situation is generally satisfactory." The volume of employment generally throughout the United States during August shows gains in most of the major industries.

Condensed reports, from the automotive centers, reflecting the automotive and tire employment status, are as follows:

Michigan: Automobile and accessory factories report overtime.

Detroit: Slight surplus of workers in automobile industry. All plants are operating.

Flint: Shortage of skilled automobile mechanics; demand for tool and die makers. Almost all automobile plants working overtime in some departments. One plant, employing 9000, has night shift. Additions being made to four large motor plants.

Jackson: Shortage of automobile parts mechanics.

Saginaw: Gear plant and automobile supply company working overtime.

Pontiac: One plant working overtime.

Ohio: Rubber factories, generally, working overtime.

Akron: Slight shortage of skilled mechanics; tire and tube plants working at high rate but facing curtailed schedules.

New York: Slight improvement in automobile and allied industries.

Buffalo: Automotive industry is keeping up a high rate of production, scarcity of skilled mechanics.

New Jersey: Automobile accessory, rubber tire and tube plants operating on satisfactory rate, with labor well employed. At Trenton, the tire and tube departments of the rubber industry running close to capacity.

Pennsylvania: Automobile and accessory plants are keeping full forces steadily employed.

Indiana: General improvement in all major industries. Company in South Bend will have 12,000 on its payrolls within 30 days.

Oppose Federal Truck Law

NEW YORK, Sept. 15—Opposition to Federal legislation designed to control motor truck transportation was expressed in a resolution adopted by Shippers Conference of Greater New York at its monthly meeting here. W. H. Chandler, chairman of its legislative committee and manager of the traffic bureau was authorized to attend officially a hearing on this subject in Washington on Oct. 21.

JEWETT CAMPAIGNS FOR NEW CAR NAME

DETROIT, Sept. 11—The Paige-Detroit Motor Car Co. is running a national advertising campaign inviting the public to submit a suitable name for the new Jewett four-door sedan, recently introduced.

To the person submitting the winning name will go a cash prize of $10,000, and to the two next best suggestions the company will award to each, a Jewett four-door sedan. The contest opens Oct. 1 and ends Oct. 31.

H. M. Jewett, president the Paige-Detroit Motor Car Co., Charles W. Brooke, advertising expert, president of the Detroit Adcraft Club and Detroit Better Business Bureau, and Edgar A. Guest, famous poet and writer, will be the judges.

Moto Meter Buys National Gauge Co.

NEW YORK, Sept. 15—The Moto-Meter Co., Inc., Long Island City, has bought the National Gauge & Equipment Co., La Crosse, Wis., manufacturers of oil gages, ammeters, gasoline level gages and instrument panels for automobiles.

In conjunction with the Boyce Moto Meter, the company declares that this acquisition balances out the Moto Meter company's line in such a way that it will now be in position to supply all instrument requirements to the automotive industry.

The National Gauge & Equipment Co. occupies a modern plant employing 1200 men and will remain under the same general management as before. The Boyce company further states that no changes in policy are contemplated.

Kirk & Blum Add Plant

CINCINNATI, Sept. 14—Kirk & Blum Mfg. Co., designing engineer and manufacturer of pneumatic dust collecting, ventilating and conveying systems, has doubled plant capacity by the purchase of an adjoining factory. The need for larger space has arisen principally through the development of the contract manufacturing department which is handling production of sheet metal parts for many manufacturers. This service is reported to have become popular with companies requiring high-grade sheet metal fabrication in the assembly of their products.

Chrobaltic Builds Foundry

DETROIT, Sept. 15—Chrobaltic Tool Co. has built and is now operating a new foundry unit at Michigan City, Ind., specially designed for the manufacture of high quality heat-resisting and special alloy castings. With the new facilities, the company has improved its production capacity and service possibilities.

Financial Notes

E. I. du Pont de Nemours & Co., stockholders have voted to change the authorized common stock from 1,500,000 shares at $100 per share to 5,000,000 no par shares. Each share of old common is to be exchanged for two new no par shares. This will increase the number of shares issued and outstanding to 2,661,658 shares from 1,330,829. A meeting of the directors is scheduled for Sept. 20 to arrange and set a date for the exchange of the old stock for the new.

Goodyear Tire & Rubber Co. of Canada, Ltd., in addition to declaring regular quarterly dividend of 1¾ per cent on preferred, payable Oct. 1 to stock of record Sept. 15, has also declared 3½ per cent on arrears, payable same date. This reduces arrears to 1¾ per cent.

Indiana Truck Corp., declared a dividend of 50 cents a share on its class "A" stock and also on its class "B" stock, payable this month.

Timken-Detroit Axle Co. has declared the regular quarterly dividend of 1½ per cent and an extra of one-half of 1 per cent, payable Oct. 1 to stock of record Sept. 20.

Reo Motor Car Co. has declared regular quarterly dividend of 2 per cent and an extra of 2 per cent, payable Oct. 1 to stock of record Sept. 15.

Mack Trucks, Inc. has declared regular quarterly dividends of $1.50 on common and $1.75 on first and second preferred stocks, payable Sept. 30 to stock of record Sept. 15.

Hupp Motor Car Corp. stockholders voted to increase the capital stock of the company from 1,000,000 to 2,000,000 shares of $10 par. All directors were re-elected.

Hinkley Motors & Parts New Hinkley Organization

DETROIT, Sept. 13—Hinkley Motors & Parts Corp. has been formed with C. C. Hinkley as president and general manager, to take over the assets of Hinkley Motors, Inc., and will carry on the manufacture of the line of engines and transmissions in which the former company was engaged. The property of the Mott Wheel Co. at Jackson, Mich., has been taken over and the business will be moved there by Oct. 1.

Officers of the new corporation in addition to Mr. Hinkley, are H. B. Small, vice-president and treasurer, and Leo Mellen, secretary.

The engines built by the company are all in the heavy duty field. It also builds three and four speed sliding gear transmissions for replacement purposes on Ford cars and trucks. The policy of exchange and replacement engine service will be continued.

Zapon Opens New York Office

NEW YORK, Sept. 14.—The Zapon Co., manufacturers of Zapon lacquers and lacquer enamels, have opened a new sales office and warehouse at 547 Greenwich Street to facilitate service in the Metropolitan district. H. W. McGovern is in charge.

Anderson Trustees Take Over Property

Bid of $53,000 Includes Plant and Timber Tracts — Preferred Claims Covered

ROCK HILL, S. C., Sept. 11—The property of the Anderson Motor Co., at one time one of the South's largest enterprises, has been sold at auction. Edward A. Sictor, of Cincinnati; R. C. DeRosset, of Wilmington, N. C., and Ernest Patton, of Greenville, S. C., as trustees, bid in the plant, its equipment and stock and four large tracts of hardwood timber for $53,000. W. B. Wilson, attorney for the buyers, said that the trustees represented certain bond holders but would not disclose their identity.

The purchasers have no plans yet for putting the plant into operation or for converting it to another line of industry. Taxes due the county totaling $13,962.50, and taxes and paving due the city received priority over other claims. The price was sufficient to meet the preferred claims, it was stated.

Anderson Motor Co. was formerly the Rock Hill Buggy Co. For many years, when John G. Anderson was at its head, the buggy company prospered. The motor company was capitalized at $3,625,000, of which $2,000,000 was in preferred stock, and $1,625,000 in common stock. The common stock was later reduced to $162,500, and an issue of $500,000 additional preferred stock was authorized, although only $60,000 worth of the issue was sold.

For a time the company was apparently prospering, producing a large volume of cars and bringing in much skilled labor to the city. The slump which followed the war caught the company in its eddy. While in its prosperous stage, however, hundreds of persons invested in stock. Stockholders scattered all over the South lost heavily.

In 1924 the company issued first mortgage bonds of $360,000 to meet obligations. Production of automobiles had been abandoned for some time and the plant had been at a standstill.

Minerva Engine Meets Belgian Aviation Test

PARIS, Aug. 26 (*by mail*)—The Minerva Knight-type eight-cylinder aviation engine has successfully completed the Belgian Government 57½-hr. bench tests, carried out under the regulations of the International Commission of Aerial Navigation. Although given official credit for 57½ hours running, the engine really operated for 70 hours, and on being dismounted after the tests was found to be in excellent condition.

An eight-cylinder V-type, the Minerva Knight engine has a bore and stroke of 4.13 by 5.9 inches, giving a piston displacement of 633 cu. in. The compression ratio is 5.42; Elektron (magnesium) pistons, a Zenith carburetor, a Scintilla magneto and K.L.G. plugs were used during the test. Weight in running order, including propeller boss, is 525 lbs., but this can be reduced to 500 lbs. by the use of Elektron metal for the upper half of the crankcase.

The maximum horsepower obtained in the tests was 180.7 at 1820 r.p.m. with a gasoline consumption of 0.488 lb. per (metric) horsepower-hour and an oil consumption (mineral oil being used) of 0.044 lb.

Oshkosh Truck Presents New 1½-Ton Speed Model

OSHKOSH, WIS. Sept. 11.—Deliveries are now being made by the Oshkosh (Wis.) Motor Truck Co. of a new model, the Oshkosh heavy duty express, a 1½-ton speed business car, upon which it will largely concentrate its production for the present. The new express is a rear-wheel drive, the concern previously having been specializing in a quadruple drive design. A speed of 40 miles per hour with full load is claimed for the truck.

The new model, known as "R", is powered with a 4-cylinder Hercules motor of 4-in. bore and 5-in. stroke, with high tension magneto ignition, pressure lubrication, Zenith carburetor with hot spot manifold, and pump cooling. A multiple dry disk clutch is used with a three-speed Brown-Lipe transmission and a 2¾-in. tubular drive shaft through Blood Bros. universals. A Hannum steering gear is used. The frame is pressed steel, 6-in. deep, with a 3½-in. flange, mounted on Tuthill Titanic springs and all-metal wheels carrying 32 x 6 in. pneumatic cords at the front and 34 x 7 in. pneumatic cords on the rear

The wheelbase is 141 in., tread 57 in., road clearance 11 in., overall length 9 ft. 1 in., and the chassis weight is 4230 lb. The model R is priced at $1795, f.o.b. factory, and the cab is quoted as an extra at $100 and the body also extra at $100. Production of the Oshkosh Four Wheel Drive heavy duty truck is being continued on order. The main effort, however, is to meet a constantly broadening market for a 1½-ton truck of power and speed.

Chandler Sales Up 60%

CLEVELAND, Sept. 13.—Chandler-Cleveland Motors Corp. reports an increase of 60 per cent in sales during August over any previous August in the company's history. The company has more unfilled orders on its books than at any previous time, according to Sid Black, sales manager. Dealer appointments increased 63 per cent in August over August of last year.

August Sales Increase

WASHINGTON, Sept. 13—Preliminary reports to the Federal Reserve System from all sections of the country indicate that the volume of retail trade in August, 1926, was considerably larger than in August, 1925. Total sales of 507 department stores increased 6.5 per cent and mail order houses showed an increase of 12 per cent.

M.A.M.A. Credit Men Set Conference Date

General Assemblage Scheduled for First Day With Unit Meetings Following

NEW YORK, Sept. 11—A conference of credit managers of the Motor & Accessory Manufacturers Association will be held in Cleveland, Oct. 20, 21 and 22, the committee on arrangements, composed of a group of presidents, decided at a meeting here today.

Instead of the various regional or group meetings which are ordinarily held at this time, a series of meetings of these units will be held on Oct. 20 and 22, while a general conference, open to all the members of the M. & A. M. A. whether or not they are members of the individual groups, will be held on Oct. 21.

The committee, which met here today, consists of the presidents of the regional groups, as follows: T. M. Simpson, Continental Motors, president of the A. B. C. D. Association; L. F. Bomhoff, of Jaxon Motor Products Co., president of Group A; A. C. Macy, of Raybestos Co., president of Group B; Herman Reinecke, of Continental Rubber Co., president of Group C; J. J. Risch, of the Imperial Brass Mfg. Co., president of Group W; Walter J. Sutherland, of SKF Industries, Inc., president of Group R. P, and Thomas Flood, of the Moto-Meter Co., president of Group E.

The Cleveland local committee includes Ludwig Kemper, Midland Steel Products; G. C. W. Klippel, Elyria Iron & Steel Co.; R. C. Hayslett, Hydraulic Steel Co.; C. S. Pomeroy and Mr. Bolton, of the National Malleable & Steel Castings Co.

At the general conference of Oct. 21, speakers will talk on general conditions in the industry, the automotive industrial situation and on credit affiliations. Dinner will be served in the evening.

Rubber Re-Exports 1554 Tons

WASHINGTON, Sept. 8—Re-exports of crude rubber from the United States in July amounted to 1554 long tons, valued at $1,743,854, the Rubber Division of the Department of Commerce announces. These figures show the net imports during the month were 34,266 long tons. Net imports for the seven months ended July 31 were 233,253 long tons.

Of the total July re-exports, 3,375,066 lb. went to Canada; 76,050 to the United Kingdom and 22,400 to Australia.

Wisconsin Parts Builds

OSHKOSH, Wis., Sept. 4—The Wisconsin Parts Co., Oshkosh, Wis., manufacturer of axles and other automotive parts and materials, has awarded contracts for the immediate erection of a 1-story manufacturing addition, 50 x 100 ft. to secure much needed capacity. Further new construction is planned during the winter months in order to meet manufacturers' demands for spring and summer production.

Wide Roads to Ease Chicago's Gateways

CHICAGO, Sept. 10—A highway improvement program of vast importance to the automobile trade in one of America's largest markets has been agreed upon by Illinois and Cook county highway officials. As a result of this agreement the State will spend $3,760,000 in providing about 25 miles of 40 ft. pavements leading out of important Chicago gateways, and will finance extensions and improvements on about 50 miles more of roads to relieve congestion.

For the most part the paved roads leading in and out of Chicago are only 18 ft. wide and for a long time they have been the scene of intolerable congestion on Sundays and holidays, causing accidents and seriously restricting the use of motor vehicles.

Under the present plan Cook county proposes to vote upon a $15,000,000 bond issue which will be used in addition to the State funds for the construction of new wide roads and the improvement and widening of other highways than those to be financed by the State. Contracts under the State program are to be let immediately and the widened pavements are to be ready for traffic before the winter of 1927.

Casting Company Expands

KANSAS CITY, Sep. 11—The American Die Casting & Stamping Co., manufacturers of alloy castings for motor cars and automotive accessories, has moved into a new and larger plant. The company was organized one year ago, beginning business with a force of five men and one casting machine. It now employs 75 men. The total investment at the new plant, including new equipment is approximately $175,000, according to H. J. Talge, general manager of the corporation.

Coming Feature Issues of Chilton Class Journal Publications

Sept. 30—Automotive Industries. Annual Production Issue

Nov. 4—Motor World Wholesale. Annual Marketing Issue

Jan. 1—Automobile Trade Journal. Annual Show Issue

Jan. 4—Motor Age. Annual Show Issue

Standard Foundry Plant to Treble Racine Plant

RACINE, Sept. 11—The Standard Foundry Co., specializing in the production of cylinder blocks and cylinder heads for automobile, truck and tractor engines, has undertaken another unit of its plant enlargement program which means an immediate additional investment of $100,000. It consists of a brick and steel cupola building, 110 x 220 ft., running parallel with the new core building recently completed.

The floor area of 26,000 sq. ft. will be nearly three times the present foundry, which is to be converted into a cleaning room when the new cupola building is completed about Dec. 1. The Standard company is hard pressed for capacity despite the fact that it is operating at full capacity the foundry of the J. I. Case Plow Works, Inc., at Racine, which it holds under lease, in addition to its own plant, now being trebled in size. Arthur R. Janes is president and general manager.

Hercules Extends Output

EVANSVILLE, IND., Sept. 11—The automotive department of the Hercules Corp., will start on a 125-bodies-a-day production program Oct. 1. The division is now building 100 a day.

Truck Makers Open Milwaukee Branches

MILWAUKEE, Sept. 11—The third large motor truck sales and maintenance station to be built in Milwaukee is that about to be undertaken by the White Truck Co. Purchase has been completed of a lot with 170 ft. frontage on Clybourn Street, just east of 25th Street. Only a short distance away, the Mack International Motor Truck Corp. is completing a Milwaukee branch house, 200 x 425 ft. International Harvester Co., which maintains a general sales, service and warehousing plant, formally opened on Aug. 22 a new service station of 12,000 sq. ft., devoted exclusively to the maintenance of International trucks. The extraordinary provisions being made for truck service by the three imposing factors in the motor truck field reflect the results of more than two years of business development, mainly in the field of heavy duty trucks, the sale of which in the Milwaukee territory so far this year has far outdistanced every past record for a similar period.

Flint Files Incorporation

ELIZABETH, N. J., Sept. 11—Articles of incorporation have been filed here by the Flint Motor Co., which now occupies part of the Durant plant here. The authorized capitalization is 5000 shares of no par value. Incorporators are Henry F. Herberman and Thomas R. McTigue, of New York City, and Edward A. Maypother, of Jersey City.

July Gasoline Set Marks

NEW YORK, Sept. 11—Domestic production of gasoline in July totaled 24,929,000 bbl., a new record compared with 24,237,000 bbl. in June, according to the Bureau of Mines. Domestic consumption of gasoline in July also made a record with 24,167,000 bbl.

Calendar of Coming Events

SHOWS

Boston, Mass. .....Sept. 27-Oct. 2
Radio Exposition, Mechanics' Bldg.
Brussels .....Dec. 4-15
Buenos Aires .....Dec. 7-20
Ninth Argentine Automobile Show, Palermo Park.
Cairo.....Feb. 15-March 15
First International Motor Show.
Chicago .....Sept. 20-24
National Steel and Mechanical Tool Exposition, Municipal Pier, American Society for Steel Treating.
Chicago.....Sept. 27-Oct. 2
National Radio Exposition.
Chicago .....Nov. 8-13
Coliseum, Automotive Equipment Association.
Chicago .....Nov. 8-13
Accessory Exhibit, Armory.
Chicago .....Nov. 15-19
Hotel Sherman, National Standard Parts Association.
Chicago .....Jan. 10-15
Coliseum, American Road Builders' Association.
Chicago .....Jan. 29-Feb. 5
National, Coliseum, National Automobile Chamber of Commerce.
Chicago .....Jan. 29-Feb. 5
Annual Salon, Hotel Drake.
Cleveland .....Oct. 4-8
Public Auditorium and Annex, American Electric Railway Association.
London .....Oct. 4-9
Olympia Motor Cycle.
London .....Oct. 21-30
Los Angeles .....Feb. 12-19
Annual Salon, Hotel Biltmore.
Milan .....Sept. 1-20
Exposition.
New York .....Sept. 13-18
Radio World's Fair, Madison Square Garden.
New York .....Nov. 24-Dec. 4
Annual Salon, Hotel Commodore.
New York .....Jan. 8-15
National, Grand Central Palace, National Automobile Chamber of Commerce.
Paris .....Oct. 7-17
Auto Salon, Grand Palais.
Paris .....Dec. 3-19
International Aeronautic Exposition, Grand Palais.
Ponce, Porto Rico .....Dec. 1-12
Prague .....Sept. 18-28

CONVENTIONS

American Electric Railway Association, Public Auditorium and Annex, Cleveland .....Oct. 4-8
American Road Builders' Association, Congress Hotel, Chicago .....Jan. 10-15
American Society for Steel Treating, Municipal Pier, Chicago.....Sept. 20-24
Associated Manufacturers of Fabric Auto Equipment, Inc., La Salle Hotel, Chicago .....Nov. 13
Automotive Equipment Association, Coliseum, Chicago .....Nov. 8-13
National Association of Finance Companies, Chicago .....Nov. 15-16
National Standard Parts Association, Hotel Sherman, Chicago.....Nov. 15-19
National Tire Dealers Association, Inc., Memphis, Tenn. .....Nov. 16-18

S. A. E. MEETINGS

National

Boston, Nov. 16-18, National Transportation and Service.
Chicago, Sept. 21-23, Production Engineering, Hotel Sherman.

RACES

Altoona .....Sept. 18
Atlantic City .....Sept. 25
Dallas, Texas .....Nov. 11
Laurel, Md. .....Oct. 23
Los Angeles .....Nov. 25
Salem, N. H. .....Oct. 13